DOCUMENT RESUME

ED 264 433 CE 043 158

TITLE	Emergency Medical Technician-Ambulance: National Standard Curriculum. Instructor's Lesson Plans (Third Edition).
INSTITUTION	National Highway Traffic Safety Administration (DOT), Washington, D. C.
REPORT NO	DOT-HS-900-073
PUB DATE	84
NOTE	343p.; For related documents, see CE 043 157-159.
AVAILABLE FROM	Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402.
PUB TYPE	Guides - Classroom Use - Guides (For Teachers) (052)
EDRS PRICE	MF01/PC14 Plus Postage.
DESCRIPTORS	*Allied Health Occupations Education; Behavioral Objectives; Classroom Techniques; Course Content; Course Descriptions; *Emergency Medical Technicians; *First Aid; *Injuries; Lesson Plans; Medical Assistants; *Medical Services; Postsecondary Education; Rescue; Teaching Methods; Units of Study

ABSTRACT

This set of instructor's lesson plans is one of three documents prepared for the Emergency Medical Technician (EMT) National Standard Curriculum. It contains detailed outlines of course content and guidance for teaching each course lesson. The training course contains 33 lessons covering all emergency medical techniques currently considered to be within the responsibilities of the EMT providing emergency care with an ambulance service. Each lesson consists of the following parts: (1) title page and objectives, total lesson time, and student performance objectives for the lesson; (2) requirements for equipment, materials, illustrations, instructors, and facilities; (3) instructor tasks needed to prepare for teaching the lesson; and (4) a detailed lesson outline and suggested instructional strategy. For the evaluation lessons, aids for developing evaluation checklists are included. A synopsis of the 33 lessons appears in the introduction to the lesson plans. Appendixes to the lesson plans include the American Heart Association cardiopulmonary resuscitation guidelines, a bibliography, and in-hospital clinical guidelines. (KC)

****
*   Reproductions supplied by EDRS are the best that can be made   *
*   from the original document.   *
****

BEST COPY AVAILABLE

U.S. Department
of Transportation

**National Highway
Traffic Safety
Administration**

Emergency Medical Technician-Ambulance: National Standard Curriculum

Instructor's Lesson Plans
(Third Edition)

1984

ED264433

U.S. DEPARTMENT OF EDUCATION
NATIONAL INSTITUTE OF EDUCATION
EDUCATIONAL RESOURCES INFORMATION
CENTER (ERIC)
✓ This document has been reproduced as received from the person or organization originating it.
Minor changes have been made to improve reproduction quality.

- Points of view or opinions stated in this document do not necessarily represent official NIE position or policy.

CE043158

Table of Contents

Foreword iii
Introduction v
Lesson 1. Introduction to Emergency Care Training 1
Lesson 2. Anatomy and Physiology and Patient Assessment 15
Lesson 3. Airway Obstruction and Respiratory Arrest 31
Lesson 4. Cardiac Arrest 49
Lesson 5. Manikin Practice and Certification 61
Lesson 6. Practical use of Airway Adjuncts 65
Lesson 7. Bleeding and Shock 81
Lesson 8. Test and Evaluation-Airway Care, Pulmonary Arrest, Cardiac Arrest, Bleeding and Shock 97
Lesson 9. Review of Shock and Introduction to the Practical use of Pneumatic Counter Pressure Devices (MAST) 105
Lesson 10. Soft Tissue Injuries 115
Lesson 11. Principles of Musculoskeletal Care and Fractures of the Upper Extremity 125
Lesson 12. Fractures of the Pelvis, Hip and Lower Extremities 141
Lesson 13. Practical Lab: Fracture care of the Upper and Lower Extremities 149
Lesson 14. Injuries of the Head, Face, Eye, Neck and Spine 153
Lesson 15. Practical Lab: Patient Assessment 169
Lesson 16. Injuries to the Chest, Abdomen and Genitalia 173
Lesson 17. Practical Lab: Injuries 185
Lesson 18. Test and Evaluation: Injuries 193
Lesson 19. Medical Emergencies I 197
Lesson 20. Medical Emergencies II 215
Lesson 21. Emergency Childbirth 235
Lesson 22. Burns and Hazardous Materials 247
Lesson 23. Environmental Emergencies 257
Lesson 24. Psychological Aspects of Emergency Care 267
Lesson 25. Lifting and Moving Patients 285
Lesson 26. Principles of Extrication 297
Lesson 27. Practical Lab: Extrication 307
Lesson 28. Test and Evaluation—Medical Emergencies, Emergency Childbirth, Environmental Emergencies, Lifting and Moving 311
Lesson 29. Ambulance Operations I 317
Lesson 30. Ambulance Operations II 329
Lesson 31. Situational Review 335
Lesson 32. Final Written Test 345
Lesson 33. Final Practical Evaluation of Skills 349
Appendices: Appendix A: American Heart Association CPR Guidelines 355
Appendix B: Bibliography 371
Appendix C: In-hospital Clinical Guidelines 373

For sale by the Superintendent of Documents, U.S. Government Printing Office Washington, D.C. 20402

Foreword

The National Highway Traffic Safety Administration has assumed responsibility for the development of training courses that are responsive to the standards established by the Highway Safety Act of 1966 (amended). Since these training courses are designed to provide national guidelines for training, it is NHTSA's intention that they be of the highest quality and be maintained in a current and up-to-date status from the point of view of both technical content and instructional strategy. To this end, NHTSA supported the current study which involved revision of selected curriculum packages deemed of high value to the States in carrying out their annual work programs. This course is one of a series of courses making up a National EMS training program for pre-hospital care. This program is a major component of the total EMS system development.

The original package of the current training program was prepared in 1969 and was titled "Basic Training Program for Emergency Medical Technician-Ambulance." This training course was revised in 1977 and generally reflected the coverage and design of the original training. A Student Study Guide was developed which was not included as part of the original package. During the revision of the third edition, all three documents have been updated. The current Instructor's Lesson Plans have been updated and expanded to reflect a greater emphasis on the practical application aspects of being an EMT as well as to represent the current state of the art in pre-hospital emergency care at a basic life support level. The Course Guide has been updated to reflect the revised program and to be more responsive to the needs of the course coordinator. The Student Study Guide has been revised to parallel the changes in Instructor's Lesson Plans. The material which was previously contained in the DOT Patient Handling Manual has likewise been incorporated into the Student Study Guide and Instructor's Lesson Plans along with instruction on the Military Anti-Shock Trousers (MAST).

Since the inception of this training course, the Department of Transportation has worked closely with many consultants to assure the quality of the medical content of this curriculum. Most notably, the American Academy of Orthopaedic Surgeons has contributed substantially to the quality of this endeavor. As early as 1964, the Academy established and conducted training courses for ambulance personnel. From these courses the original National Standard Curriculum was developed along with the Academy's reference textbook, **Emergency Care and Transportation of the Sick and Injured.**

The third edition of this text, published by the Academy in 1981, has served as the primary reference text for the medical content of this curriculum to provide a great deal of materials and to update and refine many of the older concepts.

NHTSA wishes to thank the entire membership of the National Council of State Emergency Medical Services Training Coordinators in the development and review of these materials. Specifically acknowledgement is provided to the following project staff for the National Council of State EMS Training Coordinators who coordinated this revision effort:

A.C. "Buck" Buchanan, Massachusetts
Patrick Cote, Maine
S. Gail Dubs, Pennsylvania
Michael F. French, Wisconsin
Tyler B. Larson, North Dakota
Nels D. Sanddal, Project Director

NHTSA also recognizes the following individuals who represented their organizations in an official liaison capacity during this project.

James D. Heckman, M.D., representing the American Academy of Orthopaedic Surgeons

Zella Jacobsen, R.N., Certified Psychiatric Nurse, Montana Deaconess Medical Center, Great Falls, Montana for her assistance in the development of Lesson 24.

4

John C. Johnson, M.D., representing the American College of Emergency Physicians

Norman E. McSwain, M.D., representing the American College of Surgeons

Robert Porter and David Wuertz, representing the National Association of Emergency Medical Technicians

Introduction

This instructor's lesson plans document is one of three documents prepared for the Emergency Medical Technician—Ambulance, National Standard Curriculum. It was prepared for the course instructors. As such, it contains detailed outlines of course content and guidance for teaching each course lesson. Two other documents complete the training package: a Course Guide which contains planning and management information required by the course coordinator to administer the training program and a Student Study Guide which provides an overview of the objectives and content of each course lesson and includes study suggestions to aid trainees in achieving course objectives.

The training course covers all emergency medical techniques currently considered to be within the responsibilities of the EMT-A providing emergency care with an ambulance service. The course consists of 33 lessons involving 100 hours of classroom and field training plus 10 hours of in-hospital observation and training. The titles and times required for each of the 33 course lessons are given on the following page. The specified training times are minimal; actual training time (including clinical experiences) is expected to range from the recommended minimum of 110 hours to 140 hours or more depending on individual State program requirements. The purpose of the training is to **Ensure Individual Competency In Each Student** by the successful completion of each objective.

In order to be maximally useful to most States, it was determined that the basic structure and format of the course should remain essentially unchanged in this revision effort. The major program changes include: a complete technical update, an early and continuing emphasis on patient assessment, and reinforcement throughout the course of the basic sequence of emergency care procedures. Thus the instructor will note that the primary patient survey for life-threatening problems and the secondary survey for injuries not threatening to life have been introduced in Lesson 2. Both surveys are repeated throughout the training program as are basic emergency care procedures. Additional time has been added to allow for improved practical skill development at several points throughout the course. Several new lessons have been added, e.g., the Psychological Aspects of providing Emergency Care; and several other lessons have been substantially reorganized.

This instructor's lesson plans document includes a section for each course lesson. In general, lessons have been designed to be self-contained units. Each lesson consists of the following parts:

Title Page and Objectives. Specified here are the title of the lesson, total lesson time, and student performance objectives for the lesson.

Requirements. Specified here are lesson requirements for equipment, materials, illustrations, instructors, and facilities as required.

Instructor Tasks. Specified here are tasks the instructor should perform to prepare himself for teaching the lesson.

Lesson Outline. This section includes a detailed outline of the content of the lesson and the suggested instructional strategy. In addition, time estimates are provided for various lesson segments to provide a means by which the instructor can determine the emphasis to be given to a specific topic as well as to aid him in completing his lesson on schedule.

For the evaluation lessons, prepared written tests are required to evaluate student knowledge and checklists are required to provide for a standardized evaluation of student skills. Aids for developing the checklists are included in the evaluation lessons. It is assumed that all written tests and skill checklists will be developed by course instructors in cooperation with the Course Coordinator.

Course Lessons

1. **Introduction To Emergency Care Training** (3 hrs.) Overview of course objectives, scope, EMT-A roles and responsibilities, legal aspects of emergency care.

2. **Anatomy, Physiology and Patient Assessment** (3 hrs.) Overview of human systems, including anatomy, physiology and an introduction and practice in patient assessment.

3. **Airway Obstruction and Respiratory Arrest** (3 hrs.) Basic mechanics of respiration; signs of airway obstruction and respiratory arrest; maintaining an open airway; pulmonary resuscitation; variations for infants, children and laryngectomees.

4. **Cardiac Arrest** (3 hrs.) Basic mechanics of circulation; signs of cardiac arrest; cardiopulmonary resuscitation by a lone rescuer and by a team of rescuers; variations for infants and children.

5. **Manikin Practice and Certification** (4 hrs.) This lesson when combined with lessons 3 and 4 should provide the student with sufficient practice to be certified in CPR to American Heart Association Standards.

6. **Practical Use of Airway Adjuncts** (3 hrs.) Use of airways, suction equipment, oxygen equipment and delivery systems, resuscitation devices. Special considerations in CPR.

7. **Bleeding and Shock** (3 hrs.) Basic mechanics of circulation; determining blood pressure; signs of shock; preventing shock; treating shock; signs of external and internal bleeding; controlling bleeding; performing an examination for life-threatening problems; taking blood pressure; additional practice on airway care; pulmonary and cardiopulmonary resuscitation; use of mechanical aids to airway care and resuscitation.

8. **Test and Evaluation—Airway Care, Pulmonary Arrest, Cardiac Arrest, Bleeding and Shock** (3 hrs.) Test of knowledge taught thus far; practice on an evaluation of skills taught thus far.

9. **Review of Shock and Introduction To Practical Use of Pneumatic Counter Pressure Devices** (MAST) (4 hrs.) This lesson provides a review of shock, indications and contraindications in the use of pneumatic counter pressure devices (PCPD) and provides practice in their application.

10. **Soft Tissue Injuries** (3 hrs.) Anatomy and physiology of the skin, signs and significance of various wound types, basic care of wounds, dressing and bandaging wounds.

11. **Principles of Musculoskeletal Care and Fractures of the Upper Extremity** (3 hrs.) Anatomy and physiology of the musculoskeletal system; definitions and types of fractures and dislocations; signs and symptoms of fractures, dislocations and sprains; examining a patient for injuries; techniques of immobilizing fractures and dislocations of the upper extremity.

12. **Fractures of the Pelvis, Hip and Lower Extremity** (3 hrs.) Signs and symptoms of fractures and dislocations of the pelvis, hip and lower extremity; immobilizing fractures and dislocations of the pelvis, hip and lower extremity; practice in examining a patient for injuries and in the use of pneumatic counter pressure devices.

13. **Practical Lab: Fracture Care of the Upper and Lower Extremities** (3 hrs.) Practice in the assessment and management of fractures of the upper and lower extremities.

14. **Injuries of the Head, Face, Eye, Neck and Spine** (3 hrs.) Anatomy and physiology of the nervous system; signs and symptoms of spine fractures; general rules of caring for patients with spine injuries; signs of a skull fracture; caring for patients suffering from injuries to the skull, brain, face, eye and neck; practice in immobilizing patients on short and long backboards.

15. **Practical Lab: Patient Assessment and Spine Immobilization** (3 hrs.) Practice of patient assessment techniques and in the recognition and treatment of spine injuries.

16. **Injuries to the Chest, Abdomen and Genitalia.** (3 hrs.) Parts and functions of the abdomen, digestive system and genitourinary system; chest, abdomen, and genitalia; techniques of care; dressing and bandaging the chest; practice in performing a complete patient examination for life-threatening problems and injuries.

17. **Practical Lab: Injuries I** (3 hrs.) Practice in the recognition and treatment of injuries to various body parts including: performing a patient examination, use of pneumatic counter pressure devices, dressing and bandaging, spine immobilization and fracture immobilization.

18. **Test and Evaluation: Injuries II** (3 hrs.) Written and practical examination covering "the recognition and treatment of injuries to various body parts including: performing a patient examination, use of pneumatic counter pressure devices, dressing and bandaging, spine immobilization and fracture immobilization."

19. **Medical Emergencies I** (3 hrs.) Causes, signs, symptoms and techniques of care for poison victims; victims of bites and stings; heart attack patients; stroke patients; patients suffering from dyspnea. Practice in CPR and mechanical aids to resuscitation.

20. **Medical Emergencies II** (3 hrs.) Causes, signs, symptoms and techniques of care for diabetic patients, patients suffering from acute abdominal problems, patients with communicable diseases, poisoning patients, patients having seizures, pediatric patients, practice in patient assessment.

21. **Emergency Childbirth** (3 hrs.) Relevant anatomy, physiology, terms and emergency care equipment; delivery and care of the baby and mother during normal and abnormal births; resuscitating the newborn; care of the premature infant, practice in simulated deliveries.

22. **Burns and Hazardous Materials** (3 hrs.) Estimating the degree and size of a burn, caring for the burned patient; special dangers of different types of burns (heat, chemical, electrical, radiation), identification and recognition of hazardous materials situation and proper precautionary procedures.

23. **Environmental Emergencies** (3 hrs.) Signs, symptoms and techniques of care for the patient suffering from heat cramps, heat exhaustion, heat stroke, hypothermia and frostbite; signs, symptoms and techniques of care for the patient exposed to water related emergencies.

24. **Psychological Aspects of Emergency Care** (3 hrs.) Considerations when dealing with special patients: infants, children, elderly, handicapped, psychologically disturbed; patients displaying abnormal behavior, substance abuse patients, dealing with death and dying and emotional aspects of providing care as an EMT-A.

25. **Lifting and Moving Patients** (3 hrs.) Techniques of lifting and moving patients; immobilizing patients with suspected spine injuries on short and long backboards; loading and unloading stretchers; review of triage.

26. **Principles of Extrication** (3 hrs.) Principles and considerations involved in gaining access to and extricating persons from inaccessible situations, packaging and removing patients with suspected spine and other injuries; removing patients from beneath vehicles.

27. **Practical Lab: Extrication** (3–8 hrs.) Practice in patient assessment, treatment and removal of patients from motor vehicles and other inaccessible situations.

28. **Test and Evaluation—Medical Emergencies, Emergency Childbirth, Environmental Emergencies, Lifting and Moving** (3 hrs.) Test of knowledge and skills of medical emergencies, emergency childbirth, environmental emergencies, psychological aspects, and lifting and moving patients; extrication.

29. **Ambulance Operations I** (3 hrs.) Overview of regulations and recommendations pertaining to driving an emergency vehicle, provide an understanding of all records and reporting systems and forms utilized by the EMT and promote efficient and proper use of all radio communications equipment and systems the EMT-A will utilize.

30. **Ambulance Operations II** (3 hrs.) Provide an overview of such aspects of EMT responsibilities as: vehicle and equipment maintenance, emergency department procedures, scene control, special scene situations (crime, death, etc.), disaster planning and other non-medical functions during a typical ambulance run.

31. **Situational Review** (3 hrs.) Review of course contents by group discussion of situational examples.

32. **Final Written Test** (2 hrs.) Test of knowledge learned.

33. **Final Practical Evaluation of Skills** (3 hrs.) Evaluation of skills learned in the emergency care course.

Lesson 1
Introduction to Emergency Care Training

Objectives

At the conclusion of Lesson 1, the instructor will have provided sufficient information, demonstration, and practice to the student to ensure his/her ability to:

- Describe in their own words the goal of the EMT-A, National Standard Curriculum.
- List four contributing agencies in your local EMT-A system.
- Describe the mechanism for accessing your local EMS system.
- List six roles and responsibilities of the EMT-A.
- List six areas of personal attitude and conduct expected of an EMT-A.
- List three medico-legal aspects of emergency medical care.
- Describe State requirements for EMT-A certification and recertification.

Requirements

Material: (One for each student)

- Registration form
- Textbook
- Workbook
- Student Study Guide
- Handouts
- Certification and recertification requirements
- Medico-legal requirements
- Local and State rules and regulations
- Others as required

Equipment:

- 16 mm projector
- 35 mm projector
- Movie screen
- Chalkboard

Visual Aids: (suggested)

- 16mm film "Life or Death" or similar
- 35 mm slides—AAOS or similar

Instructors:

- State EMS Office representative or assignee knowledgeable in all areas of subject matter.

Instructor Preparations/Tasks

The Instructor Should:

- Review the lesson outline to assure understanding of contents and procedures.
- Review and preview all references and visual aids selected for the lesson by the course administrator.
- Select and prepare appropriate instructional aids in addition to those provided by the course administrator; if desired.
- Be familiar with all visual aids and other equipment to be demonstrated during the lesson.
- Be able to familiarize the student as to the content and purpose of all course literature to be presented during this lesson.
- Be knowledgeable of all State and local laws, ordinances, rules and regulations relative to providing good emergency care.
- Be aware that much of the lesson is introductory in nature and will be repeated and reinforced in subsequent lessons.

Time (Elapsed) Actual — **Contents**

Introduction
(--) 0:05

1. Instructor introduction
   a. Name
   b. Title
   c. Affiliation, etc.
2. Student welcome—acknowledgement that attendees are assembled for the first lesson of an 81-hour course in emergency medical care, designed to prepare students to become emergency medical technicians, or EMT's.
3. Registration form completion.

Need for Training
(0:05) 0:05

1. The EMT's primary responsibilities are to bring expert emergency medical care to victims of emergencies, stabilize their conditions, and transport them safely and expeditiously to the hospital.
2. The EMT-A must perform his duties unsupervised, in a great variety of circumstances, and often under considerable physical and emotional stress.
3. The EMT-A typically represents the first component of the emergency medical care system. With proper training, he will be able to provide basic life support to victims of emergencies as well as minimize discomfort and further injury.
4. The actions of the EMT-A can mean the difference between life and death of the victim. Proper handling and care of the patient at the scene can minimize patient suffering and reduce recuperation time.
5. This course will provide Basic training in all aspects of emergency medical care which an EMT-A is permitted to provide today. Advanced, continuing education and refresher training courses are also available as part of a career development pattern.
6. This course is the national standard for training emergency medical technicians.
7. The responsibilities associated with the EMT-A profession are major. It is therefore important that the student take his training responsibilities seriously by attaining 100% proficiency in all areas through punctuality, attendance, completion of assignments, class participation and full cooperation with the instructor.

Course Purpose and Emphasis
(0:10) 0:05

1. The course has been designed so that, upon successful completion, the student will be able to:
   a. Recognize the nature and seriousness of a patient's illness/injuries to assess requirements for emergency medical care.
   b. Administer appropriate emergency medical care to stabilize the patient's condition.
   c. Lift, move, position and otherwise handle the patient in such a way as to minimize discomfort and further injury.
2. It is obvious that the EMT provides a service in a special environment requiring special skills and knowledge in such areas as communication, transportation, record-keeping and liaison with other emergency services. The course includes all operational functions considered to be within the roles and responsibilities of the EMT-A but does not attempt to develop proficiency in these areas.
3. The course emphasizes emergency medical care skills. However, it attempts to teach these skills in a job-related context.

Course Scope and Materials
(0:15) 0:15

1. **Course Lessons.**

   Lesson 1. Introduction To Emergency Care Training (3 hrs.) Overview of course objectives, scope, EMT-A roles and responsiblities, legal aspects of emergency care.

   Lesson 2. Anatomy and Physiology and Patient Assessment (3 hrs.) Overview of human systems, including anatomy, physiology and an introduction and practice in patient assessment.

Instructor's Notes

Describe responsibility relative to the course.

If the class is small and time permits, ask each student to introduce himself. Ask each student to complete registration form.

Refer to schedule of lessons. Indicate what instructor and student will accomplish in each lesson. Give time and place of each lesson.

Time (Elapsed) Actual	**Contents**

Lesson 3. Airway Obstruction and Respiratory Arrest (3 hrs.) Basic mechanics of respiration; signs of airway obstruction and respiratory arrest; maintaining an open airway; pulmonary resuscitation; variations for infants, children and laryngectomees.

Lesson 4. Cardiac Arrest (3 hrs.) Basic mechanics of circulation; signs of cardiac arrest; cardiopulmonary resuscitation by a lone rescuer and by a team of rescuers; variations for infants and children.

Lesson 5. Manikin Practice and Certification (4 hrs.) This lesson when combined with lessons 3 and 4 should provide the student with sufficient practice to be certified in CPR to American Heart Association Standards.

Lesson 6. Practice Use of Airway Adjuncts (3 hrs.) Use of airways, suction equipment, oxygen equipment and delivery systems, resuscitation devices. Special considerations in CPR.

Lesson 7. Bleeding and Shock (3 hrs.) Basic mechanics of circulation; determining blood pressure; signs of shock; preventing shock; treating shock; signs of external and internal bleeding; controlling bleeding; performing an examination for life-threatening problems; taking blood pressure; additional practice on airway care; pulmonary and cardiopulmonary resuscitation; use of mechanical aids to airway care and resuscitation.

Lesson 8. Test and Evaluation—Airway Care, Pulmonary Arrest, Cardiac Arrest, Bleeding and Shock (3 hrs.) Test of knowledge taught thus far; practice on an evaluation of skills taught thus far.

Lesson 9. Review of Shock and Introduction To Practical Use of Pneumatic Counter Pressure Devices (MAST) (4 hrs.) This lesson provides a review of shock indications and contraindications in the use of pneumatic counter pressure devices and provides practice in their application.

Lesson 10. Soft Tissue Injuries (3 hrs.) Anatomy and physiology of the skin, signs and significance of various wound types, basic care of wounds, dressing and bandaging wounds.

Lesson 11. Principles of Musculoskeletal Care and Fractures of the Upper Extremity (3 hrs.) Anatomy and physiology of the musculoskeltal system; definitions and types of fractures and dislocations; signs and symptoms of fractures, dislocations and sprains; examining a patient for injuries; techniques of immobilizing fractures and dislocations of the upper extremity.

Lesson 12. Fractures of the Pelvis, Hip and Lower Extremity (3 hrs.) Signs and symptoms of fractures and dislocations of the pelvis, hip and lower extremity; immobilizing fractures and dislocations of the pelvis, hip and lower extremity; practice in examining a patient for injuries and in the use of pneumatic counter pressure devices.

Lesson 13. Practical Lab; Fracture Care of the Upper and Lower Extremities (3 hrs.) Practice in the recognition and treatment of fractures of the upper and lower extremities.

Lesson 14. Injuries of the Head, Face, Eye, Neck and Spine (3 hrs.) Anatomy and physiology of the nervous system; signs and symptoms of spine fractures; general rules of caring for patients with spine injuries; signs of a skull fracture; caring for patients suffering from injuries to the skull, brain, face, eye and neck; practice in immobilizing patients on short and long backboards.

Lesson 15. Practical Lab: Patient Assessment and Spine Immobilization (3 hrs.) Practice of patient assessment techniques and in the recognition and treatment of spine injuries.

Lesson 16. Injuries to the Chest, Abdomen and Genitalia (3 hrs.) Parts and functions of the abdomen, digestive system and genitourinary system; chest, abdomen, and genitalia; techniques of care; dressing and bandaging the chest;

(Note: all times are minimum times.) Explain how the course emphasizes patient assessment and proper procedures of emergency care.

practice in performing a complete patient examination for life-threatening problems and injuries.

Lesson 17. Practical Lab: Injuries I (3 hrs.) Practice in the recognition and treatment of injuries to various body parts including: performing a patient examination, use of pneumatic counter pressure devices, dressing and bandaging, spine immobilization and fracture immobilization.

Lesson 18. Test and Evaluation—Injuries II (3 hrs.) Written and practical examination covering "the recognition and treatment of injuries to various body parts including: performing a patient examination, use of pneumatic counter pressure devices, dressing and bandaging, spine immobilization and fracture immobilization."

Lesson 19. Medical Emergencies I (3 hrs.) Causes, signs, symptoms and techniques of care for poison victims; victims of bites and stings; heart attack patients; stroke patients; patients suffering from dyspnea. Practice in CPR and mechanical aids to resuscitation.

Lesson 20. Medical Emergencies II (3 hrs.) Causes, signs, symptoms and techniques of care for diabetic patients, patients suffering from acute abdominal problems, patients with communicable diseases, substance abuse patients, patients having seizures, pediatric patients, practice in patient assessment.

Lesson 21. Emergency Childbirth (3 hrs.) Relevant anatomy, physiology, terms and emergency care equipment; delivery and care of the baby and mother during normal and abnormal births; resuscitating the newborn; care of the premature infant, practice in simulated deliveries.

Lesson 22. Burns and Hazardous Materials (3 hrs.) Estimating the degree and size of a burn, caring for the burned patient; special dangers of different types of burns (heat, chemical, electrical, radiation), identification and recognition of hazardous materials situations and proper precautionary procedures.

Lesson 23. Environmental Emergencies (3 hrs.) Signs, symptoms and techniques of care for the patient suffering from heat cramps, heat exhaustion, heat stroke, hypothermia and frostbite; signs, symptoms and techniques of care for the patient exposed to water related emergencies.

Lesson 24. Psychological Aspects of Emergency Care (3 hrs.) Considerations when dealing with special patients; infants, children, elderly, handicapped, psychologically disturbed; patients displaying abnormal behavior, substance abuse patients, dealing with death and dying and emotional aspects of providing care as an EMT.

Lesson 25. Lifting and Moving Patients (3 hrs.) Techniques of lifting and moving patients; immobilizing patients with suspected spine injuries on short and long backboards; loading and unloading stretchers; review of triage.

Lesson 26. Principles of Extrication (3 hrs.) Principles and considerations involved in gaining access to and extricating persons from inaccessible situations, packaging and removing patients with suspected spine and other injuries; removing patients from beneath vehicles.

Lesson 27. Practical Lab: Extrication (3–8 hrs.) Practice in patient assessment, treatment and removal of patients from motor vehicles and other inaccessible situations.

Lesson 28. Test and Evaluation—Medical Emergencies, Emergency Childbirth, Environmental Emergencies, Lifting and Moving (3 hrs.) Test of knowledge and skills of medical emergencies, emergency childbirth, environmental emergencies, psychological aspects, and lifting and moving patients; extrication.

Lesson 29. Ambulance Operations I (3 hrs.) Overview of regulations and recommendations pertaining to driving an emergency vehicle, provide an understanding of all records and reporting systems and forms utilized by the EMT-A

and promote efficient and proper use of all radio communications equipment and systems the EMT-A will utilize.

Lesson 30. Ambulance Operations II (3 hrs.) Provide an overview of such aspects of EMT-A responsibilities as: vehicle and equipment maintenance, emergency department procedures, scene control, special situations (crime, death, etc.), disaster planning and other non-medical functions during a typical ambulance run.

Lesson 31. Situational Review (3 hrs.) Review of course contents by group discussion of situational examples.

Lesson 32. Final Written Test (2 hrs.) Test of knowledge learned.

Lesson 33. Final Practical Evaluation of Skills (3 hrs.) Evaluation of skills learned in the emergency care course.

2. **In-Hospital Training.** In addition to the 33 lessons, the course includes 10 hours of in-hospital observation and training.

3. **Materials.** Identification of:
   a. Recommended text(s), references, reading assignments
   b. Design and use of the Student Study Guide

4. **Other Requirements.**
   a. Describe certification procedures
   b. Describe other local and/or State requirements.

Objectives of Lesson 1 (Review)
(0:30) 0:05

1. Describe in their own words the goal of the EMT-A: National Standard Curriculum.
2. List four contributing agencies in your local EMS system.
3. Describe the mechanism for accessing your local EMS system.
4. List six roles and responsibilities of the EMT-A.
5. List six areas of personal attitude and conduct expected of an EMT-A.
6. List three medico-legal aspects of emergency medical care.
7. Describe State requirements for EMT-A certification and recertification.

Role and Responsibilities of the EMT
(0:35) 0:30

1. As indicated previously, the EMT's primary responsibility is to the patient. His patient care role includes:
   a. Careful examination of the patient for signs and symptoms of illness/injuries.
   b. Prompt and efficient care of the patient and stabilization of his condition prior to transport.
   c. Careful handling of the patient in moving him to the ambulance vehicle.
   d. Safe and efficient transport of the patient while constantly monitoring the patient and providing any appropriate continuing care.
   e. Orderly transfer of the patient to the hospital emergency department.

2. In addition to the preceding patient responsibilities, he may need to perform the following functions if other emergency services are not available at the accident scene:
   a. Use basic tools and procedures to gain access to and disentangle the patient from the vehicle.
   b. Control the accident scene, including parking his vehicle in such a way as to minimize further danger in the roadway as well as controlling the actions of bystanders.

3. Other functions considered an integral part of the EMT-A's job are as follows:
   a. Communications—This role includes obtaining information regarding the emergency from the dispatcher, communicating with other emergency services as

Identify requirements for course completion. Describe nature of training planned for the course, where and when it will take place.

Indicate how these roles and responsibilities are covered in the course.

needed during the ambulance run (preceeding to the scene, at the scene, and proceeding to the hospital), and alerting hospital emergency department staff of the arrival of critical patients. The EMT-A, of course, must follow FCC regulations relative to the use of communications equipment.

b. Reporting and recordkeeping—in addition to records maintained for the ambulance service, the EMT-A will need to obtain and record information required by medical, legal and health authorities as required.

c. Vehicle driving, maintenance and care—The EMT-A will need to drive his vehicle safely and defensively at all times. In addition to routine vehicle maintenance, he will need to check his vehicle after each run for level of gas, adequacy of equipment and supplies, cleanliness, etc. He will also need to make a daily check of his vehicle equipment and systems.

4. The EMT-A will need to learn a good deal about the area in which he provides services and will need to exercise a good deal of judgment in carrying out these services. For example:

a. Enroute to the scene—The EMT-A will need to use the appropriate route depending on time of day, nature of the event, etc. He will need to plan ahead regarding equipment he might need to take with him when he leaves the vehicle, etc.

b. At the scene—The EMT-A will need to examine patients, perform triage as necessary and render appropriate care.

c. Enroute to the hospital—The EMT-A will need to monitor the patient constantly and provide continuing care.

d. At the hospital—The EMT-A will need to unload the patient carefully, communicate all needed information to the hospital emergency department staff, assist hospital personnel as necessary, etc.

5. Summary of functions:
   a. Patient examination
   b. Prompt and efficient care
   c. Appropriate patient handling
   d. Safe and efficient patient transport
   e. Orderly transfer of patient to emergency department
   f. Communications
   g. Reporting and recordkeeping
   h. Vehicle driving, maintenance and care
   i. If Rescue Crews Are Absent, gain access to and disentangle patient
   j. If Police Are Absent, control the accident scene

Personal Attitudes and Conduct of the EMT
(1:05) 0:15

1. **Professional Manner,** i.e., controls emotion, is courteous, use proper tone of voice, is confident, chooses appropriate types of conversation, does not smoke while administering care, etc.

2. **Appearance,** i.e., well groomed, clean, wears proper uniform and insignia, etc.

3. **General Conduct,** i.e., shows interest in job, reflects concern for patient, is a good team worker, prevents embarrassment to patients, gives patient reassurance, shows responsibility for safety of all involved, uses patient's resourcefulness in helping himself, is cooperative with others involved in providing aid, etc.

Ten-Minute Break
(1:20) 0:10

Instructor's Notes

Give examples.

Give examples.

Give examples.

Give examples.

Give examples.

List on chalkboard.

Emphasize importance of a calm professional manner.

Time (Elapsed) Actual | **Contents**

Legal Problems Relative to Emergency Care
(1:30) 1:00

1. **Duty to Act**—responsibilities relative to responding to the need for care.
2. **Standard of Care.** Elements which make up a standard of care include;
    a. **The Type of Individual and Community Conduct**—the individual is judged in comparison with other hypothetical persons of similar training and experience.
    b. **Standards Imposed By Force of Law**—these are standards imposed by statutes, ordinances, case law, or administrative orders.
    c. **Professional or Institutional Standards**—these are published recommendations of organizations and societies involved in emergency work and specific rules of procedure of the service of which the EMT-A is a part.
3. **Consent**
    a. **Actual Consent.** To be effective, it must be an informed consent. Oral consent is valid. A consent form does not eliminate the need for conversation.
    b. **Implied Consent.** In an emergency in which there is a significant risk of death, disability or deterioration of condition, the law assumes that the patient would give his consent.
    c. **Minor's Consent.** The right to consent is usually given to the parent or other person so close to the minor as to be treated as a parent.
    d. **Consent of the Mentally Ill.** The situation is similar to that for minors.
4. **Immunities**
    a. **Government Immunities.** Some government employees are immune to prosecution, although this has been seriously challenged.
    b. **Good Samaritan Laws.** Some States grant immunity to those who volunteer to help an injured person at the scene of an accident.
    c. **EMT-A and Paramedic Statutes.** Some States have laws specifically enacted to protect EMT's, paramedics and physicians who give them instructions via radio.
    d. **Exemption From Medical Practices Act.** Nearly every State exempts emergency treatment from the licensure requirements of the medical practices act for the EMT.
    e. **Effects of Licensure and Certification.** Most States have licensing and certification requirements that obligate the individual to conform to a standard of care.

Overview of Requirements for Training, Certification and Recertification
(2:30) 0:20

1. State requirements as appropriate for:
    a. Training: such as student prerequisites, attendance, ambulance affiliation, recommendations and interim exam performance.
    b. Certification: such as examinations, fees, applications, and recommendations.
    c. Recertification such as length of certification, continuing education, affiliation continuation examination and fees.
    d. Other requirements as indicated.

Summary and Questions
(2:50) 0:10

1. Class questions or comments on the topic of lesson.
2. Demonstration by selected class members of achievement of lesson objectives.

Instructor's Notes

Give examples of all legal problems. Emphasize that the EMT-A will need to keep up to date relative to legal requirements in the area in which he provides services. Cover local ordinances relative to child abuse, foul play, death, rape.

Emphasize importance of patient communications.

Handouts pertaining to State requirements and administrative policy pertaining to these topics should be distributed.

Question class members on selected objectives.

Lesson 2
Anatomy, Physiology and Patient Assessment

Objectives

At the conclusion of Lesson 2, the instructors will have provided sufficient information, demonstration, and practice to the student, to ensure his/her ability to:

- Define the following topographic anatomical terms:
  - medial
  - lateral
  - proximal
  - distal
  - superior
  - inferior
  - anterior
  - posterior
  - midline
  - right
  - left
- Describe the general functions of the following major body systems:
  - respiratory
  - circulatory
  - muscular
  - skeletal
  - nervous
  - digestive
  - genitourinary
  - reproductive
- List the four patient vital signs
- List five diagnostic signs in addition to the vital signs.
- Demonstrate on a programmed patient the technique for completing a total patient assessment and identify and record diagnostic signs and their normal states.
- Record and communicate in proper sequence, their patient assessment information.
- State the difference between a sign and symptom.

Requirements

Materials: (One for each student)

- Trip report form
- Vital signs pad

Equipment:

- Skeleton
- Torso with removable organs
- Break away/cross section plastic organ models of:
  - —Heart
  - —Lung
  - —Brain
- Chalkboard
- 35mm projector
- Movie Screen (minimum, one for each 6 students)
- Penlight
- Stethoscope
- Sphygmomanometer
- Thermometer

Illustrations:

- Anatomic charts of:
  - —Skeletal system
  - —Muscular system
  - —Nervous system
  - —Respiratory system
  - —Circulatory system
  - —Digestive system
  - —Genitourinary system
  - —Reproductive system
  - —Topographic terms
- Flip chart on taking of blood pressures
- List of diagnostic signs

Visual Aids: (suggested)

- 35mm slides AAOS or similar
- 16mm film—"Measuring Blood Pressure" or similar

Instructor Preparations/ Tasks

The Instructor Should:

- Review the lesson outline to assure understanding of contents and procedures.
- Review and preview all references and visual aids selected for the lesson by the course administrator.

- Select and prepare approrpiate instructional aids in addition to those provided by the course administrator; if desired.
- Be familiar with all visual aids and other equipment to be demonstrated during the lesson.
- Provide the student with an understanding of human anatomy and medical terminology as they will have to apply it rendering proper patient care.
- Provide the student with a clear understanding of what a patient assessment is and how to complete and record it.
- Brief all instructor aides as to their roles and responsibilities during the lesson.

Time (Elapsed) Actual | **Contents**

Administrative Matters
(--) 0:05

1. Student attendance.
2. Announcements, etc.

Overview of Anatomy and Physiology
(0:05) 1:00

1. **Skeletal System and Body Cavities.** The skeletal system consists of the bones that form the support framework of the body; they also protect body organs.
   a. **Skull.** The skull consists of the cranium (which contains the brain) and the face.
   b. **Spinal Column.**
      1) The spinal column encloses the spinal cord.
      2) The brain connects with the spinal cord through a large opening at the base of the skull in the center of the upper neck.
      3) The spinal column is the central supportive bony structure of the body and consists of 33 bones known as vertebrae.
      4) The spine is divided into five sections:
         a) Cervical spine-neck
         b) Thoracic spine-upper back
         c) Lumbar spine-lower back
         d) Sacrum
         e) Coccyx or tail bone
   c. **Thoracic (Rib) Cage**
      1) The chest is enclosed by 12 pairs of ribs which are attached to the thoracic vertebrae in back; the top 10 ribs are attached to the sternum (breastbone) in front.
      2) The clavicle (collarbone) connects with the sternum (breastbone).
      3) The rib cage encloses the heart and lungs—the vital organs of the body. The diaphram is a muscle which moves up and down while breathing; it separates the chest cavity from the abdominal cavity.
   d. **Abdominal Cavity**
      1) The back boundary of the abdominal cavity consists of:
         a) The lumbar spine
         b) The sacrum
         c) The coccyx (tail bone)
      2) The abdomen contains organs of digestion and excretion including the liver, gallbladder, spleen, pancreas, kidneys, stomach, intestines, bladder and rectum.
      3) The abdomen also contains female reproductive organs.
      4) The lower part of the abdomen is more properly called the pelvic cavity.
   e. **Pelvic Cavity**
      1) The pelvic cavity is bounded by the sacrum, hip bones and the pubis; it is continuous with the abdominal cavity.
      2) The pelvic cavity protects the lower abdomen: the bladder, the rectum and the internal female sexual organs.
   f. **Lower Extremities**
      1) The lower extremities extend from the hips to the toes.
      2) The bone in the upper leg (thigh) is known as the femur.
      3) The bones in the lower leg are known as the tibia and fibula
   g. **Upper Extremities**
      1) The upper extremities extend from the shoulders to the fingertips.
      2) The bone in the arm is known as the humerus.
      3) The bones in the forearm are known as the radius and ulna

If new instructor introduce self and instructor aides.

Explain that this lesson covers only a brief overview of anatomy and physiology. Each system will be covered in subsequent lessons.

Display anatomic chart and identify major system elements and body cavities. If available, refer to skeleton and torso with removable organs.

Explain how diaphragm works.

Identify each bone.

Identify each bone.

27

Time
(Elapsed)
Actual

Contents

2. **Muscular System.** The muscular system consists of the tissue that contracts and relaxes to permit body movement or functions.
   a. **Voluntary Muscles**–those which are controlled consciously, e.g., the skeletal muscles that permit us to move.
   b. **Involuntary Muscles**–Those which work automatically, for example, the diaphragm which permits us to breathe.
   c. **Cardiac Muscle**–the walls of the heart are a special type of involuntary muscle that keeps the heart functioning automatically.
3. **Nervous System.** The nervous system consists of the brain, spinal cord, and nerves that control and permit all body activities and sensations. A muscle will not move if the nerves which serve it are cut.
4. **Respiratory System.** The respiratory system consists of the organs of the body which enable breathing. It provides for the intake of oxygen needed by the body and the release of carbon dioxide and other substances. Main elements are:
   a. Nose and mouth
   b. Pharynx
   c. Larnyx
   d. Trachea
   e. Bronchi
   f. Lungs
5. **Circulatory System.** The circulatory system consists of the heart (a pump) and a system of arteries which transport blood containing oxygen to all body systems, capillaries through whose thin walls oxygen and other products are exchanged with body cells, and veins which transport blood containing waste products from body cells to be eliminated.
6. **Digestive System.** The digestive system consists of the organs which enable us to eat, digest, and eliminate foods, including:
   a. Mouth and throat
   b. Esophagus
   c. Stomach
   d. Liver
   e. Gallbladder
   f. Pancreas
   g. Intestines
   h. Rectum
7. **Genitourinary System.** The genitourinary system consists of the organs which enable us to eliminate certain waste materials filtered from the blood and to reproduce, including:
   a. Kidneys
   b. Ureter
   c. Urethra
   d. Bladder
   e. Male and female reproductive organs.

Topographic Anatomy
(1:05) 0:15

1. Right and left—the patient's right and left.
2. Surface:
   a. Anterior—front
   b. Posterior—rear
3. Midline—a vertical line dividing the body into right and left halves.
4. Proximal and distal:
   a. Proximal—location on an extremity which is nearer to the trunk; location on the trunk which is nearer to the midline or to the point of reference named.
   b. Distal—opposite of proximal
5. Superior and inferior:
   a. Superior—toward the head
   b. Inferior—toward the feet
6. Student practice.

Instructor's Notes

Refer to anatomic chart.

Give other examples.

Refer to anatomic chart.

Refer to anatomic chart.

Refer to anatomic chart.

Refer to anatomic chart.

Refer to illustration of body in standard anatomical position and give examples of each term.

Have class practice use of each term.

Time
(Elapsed)
Actual

Contents

Ten-Minute Break
(1:20) 0:10

Diagnostic Signs
(1:30) 0:20

1. **Signs vs. Symptoms.** Throughout the course, reference will be made to signs and symptoms; therefore, an initial definition of their meaning is in order.
   - a. **A Sign** is something the rescuer sees, hears or feels; for example a pale face, no respirations, cold skin.
   - b. **A Symptom** is something the patient tells about himself, that is, he feels nauseous, his back hurts, he has no sensation in the extremities.
2. **Use in Diagnosis.** The rescuer will learn many signs and symptoms throughout the course and will learn to combine them into a meaningful diagnosis of the patient's condition.
3. **Overview of Signs.** A brief overview of the important diagnostic signs is given below:
   - a. **Pulse**
     - 1) The pulse is the pressure wave generated by the heartbeat and carried along the arteries.
     - 2) The normal pulse rate for adults is 60 to 80 beats per minute; a normal rate for children is 80 to 100 beats per minute.
     - 3) The pulse is taken any place where an artery passes over a bony prominence or lies near the skin.
     - 4) The pulse can be:
       - a) Absent
       - b) Slow or fast
       - c) Weak or pounding
       - d) Irregular
   - b. **Respirations**
     - 1) The normal respiratory rate can vary widely. It is usually between 12 and 20 breaths per minute.
     - 2) Respirations can be:
       - a) absent
       - b) slow or fast
       - c) shallow or deep
       - d) gasping, labored, or choking
   - c. **Blood Pressure**
     - 1) Blood pressure is the pressure that the circulating blood exerts against the walls of the arteries. It is measured in mm Hg at two levels:
       - a) systolic—contraction of heart
       - b) diastolic—relaxation of heart
     - 2) It is measured by a device known as a sphygmomanometer.
     - 3) Blood pressure varies with age and sex. In the male, normal systolic is about 100 plus the age of the patient up to 140 to 150 mm Hg. Normal diastolic is 65 to 90 mm Hg. Both pressures are 8 to 10 mm Hg lower in females.
     - 4) Blood pressure
       - a) can be high
       - b) can be low
       - c) can fall rapidly
   - d. **Temperature**
     - 1) Normal body temperature is 37.0 C. (98.6 F.) degrees.

Indicate that this lesson provides only an overview of diagnostic signs. Each sign will be repeated in subsequent lessons and the EMT-A will learn to put them together to identify a patient's condition.

Have each class member find his own radial and carotid pulse.

2) In emergency care, temperature is estimated by feel, using the back of the hand on the patient's skin; in some situations actual temperature should be measured with a thermometer.

3) The skin is largely responsible for temperature regulation by radiation of heat and evaporation of water.

4) The skin can be:
   a) cold or hot
   b) wet, clammy or dry

e. **Skin Color**
   1) Skin color is a useful sign of lightly pigmented people.
   2) Skin color can be:
      a) white, pale or ashen
      b) red or flushed
      c) blue (for people with dark pigmentation, blue may be noted around the fingernails, palms of hands, and mouth)
   3) **Capillary refilling**
      a) Return of color in nail beds after blanching.

f. **Pupils of the Eyes**
   1) The pupils of the eyes are normally equal in size and constrict when exposed to light
   2) The pupils can be:
      a) dilated
      b) constricted
      c. unequal
      d. fixed

g. **Level of Consciousness**
   1) The normal person is alert, oriented and responds to vocal or physical stimuli.
   2) A person's state of consciousness may range from normal to mildly confused, disoriented, or unconscious.

h. **Inability to Move on Command**—an indicator of paralysis.
   1) The normal conscious person can move his body when requested to do so.
   2) A person may not be able to move his legs, both his arms and his legs, or one side of his body.

i. **Reaction to Pain**—an indicator of paralysis.
   1) The normal person can feel someone touch his body.
   2) A person may have no sensation or a numb feeling in arms and/or legs or certain parts of the body.

4. **Medical Identification Symbols**

a. People with special medical problems (for example, diabetes, epilepsy, acute allergic reactions) frequently wear a medical identification symbol on which the nature of the problem is indicated.

b. These are usually worn as a bracelet or necklace but may be carried in card form in a purse or wallet.

c. The EMT-A should always search for such symbols on unconscious or stuperous patients since they can give valuable information about the wearer and care that he needs.

Discuss the use of A.V.P.U. or Glasgow Coma scale as standardized measurement devices if used in the area

Refer to illustration of medical identification symbols.

Time (Elapsed) Actual	Contents

Patient Survey
(1:50) 0:40

1. **Stages.** At the emergency scene, patient examination must be performed. It is performed in two stages:
   a. checking for and controlling life-threatening problems—the primary survey.
   b. Checking for and stabilizing injuries not threatening to life.

2. **Primary Patient Survey.** The procedures for the life-threatening survey are accomplished simultaneously not sequentially. The EMT-A will feel, talk and observe.

   a. **State of Consciousness.**
      1) Establish responsiveness
      2) Check pupils

   b. **Respirations**
      1) Observe chest and feel for exhaled air at mouth and nose.
      2) Assess rate, quantity, quality.
      3) Don't forget the special case of the laryngectomee.

   c. **Pulse**
      1) Establish existence
      2) Assess rate and quality

   d. **Bleeding/Shock**
      1) Observe for life-threatening external bleeding.

3. **Secondary Survey.** In the secondary survey, the EMT-A makes a head-to-toe examination of the patient. He systematically observes and feels for wounds and deformities. He asks conscious patients if they feel pain or sensation. For unconscious patients, he checks for indications of pain, sensation and reflex actions.

Note: The EMT-A should always observe the accident scene and check witnesses to attempt to determine any mechanism of injury.

Note: Emphasize importance of establishing rapport with conscious patient-identifying self, obtaining and using patient's name, explaining intended movements and procedures reassuring patient.

   a. **Head**
      1) Observe for confusion, unresponsiveness, unconsciousness.
      2) Check pupils.
      3) Observe for lacerations and contusions about the face and scalp.
      4) Feel gently for depressions in the skull.
      5) Check ears and nose for fluid or blood.
      6) Check mouth for foreign objects, bleeding.

   b. **Neck**
      1) Observe for cuts, bruises, deformities.
      2) Feel for areas of tenderness, deformities.

   c. **Chest**
      1) Check for bruises, pain, deformities.
      2) Check that both sides of the chest expand normally upon inspiration.

   d. **Back and Buttocks**
      1) Check for cuts, bruises, pain deformities.

Instructor's Notes

Demonstrate procedures on a student. Explain what is being done, implications of what is found, and actions that should be taken. Stress importance of asking witnesses for information. NOTE: The EMT-A should always check for medical identification symbol.

Discuss implications.

Discuss implications.

Discuss implications.

Discuss signs.
NOTE: If there are multiple casualties, check each patient, stopping only to administer to those with life-threatening problems.

Explain that an examination for injuries will be demonstrated even though implications of all signs for all injuries have not been covered. They will be covered in subsequent lessons. In this lesson, the student will be responsible only for demonstrating procedures for examining a patient. Emphasize that the order of the exam will vary dependent upon the patient's condition and findings. Demonstrate on a student what you are doing, implications of what you find and actions you would take.

Stress importance of maintaining neutral position in trauma patients.

Time (Elapsed) Actual | **Contents**

e. **Abdomen and Pelvis**
   1) Check abdomen for tenderness, rigidity.
   2) Compress pelvis gently.

f. **Lower Extremities**
   1) Check for cuts, bruises, pain deformities, unusual positions.
   2) Check for sensation and pulse.
   3) Ask patient if he can move his legs.

g. **Upper Extremities**
   1) Check for cuts, bruises, pain, deformities, unusual positions.
   2) Check for sensation and pulse.
   3) Ask patient if he can move arms.

h. **Medical Alert Symbols**
   1) Check for tags, bracelets, etc.

i. **Interview**
   1) Obtain pertinent medical history.
   2) Note mechanism of injury
   3) Information on current medical problem.

j. **Vital Signs** (Pulse, Blood Pressure, Respirations)
   1) Obtain and record
   2) May occur elsewhere during the exam dependent upon patients condition.
   3) Repeat and record at frequent intervals.

Practice (Groups of No More Than 6 Students Per Manikin or Item of Equipment)
(2:30) 0:20

1. Each student should practice taking blood pressure of other students using the following steps.
   a. Fastening and inflating the cuff.
   b. Placing the diaphragm or bell over the brachial artery.
   c. Releasing air and recording systolic and diastolic pressures.

   Note: The student should also measure systolic pressure by palpation.

2. Each student should perform an examination of a fellow student for life-threatening problems. He should describe what he is doing, implications of his finding and actions to be taken. The instructor should provide any needed information. The student's performance should include:
   a. Checking for state of consciousness.
   b. Checking respirations.
   c. Checking pulse.
   d. Checking for life-threatening bleeding and shock.

3. Each student shall perform secondary survey on fellow students. He should describe what he is doing, implications of his findings and actions to be taken. The instructor should provide any needed information. The student's performance should include:
   a. primary survey
   b. head
   c. neck
   d. chest
   e. abdomen and pelvis
   f. lower extremities
   g. upper extremity
   h. medical alert symbols
   i. interview
   j. vital signs

Summary and Questions
(2:50) 0:10

1. Class questions or comments on the topic of lesson.
2. Demonstration by selected class members of achievement of lesson objectives.

Divide class into groups of 6. Monitor and critique each student.

Emphasize that additional opportunities will be provided for the student to practice.

Question class members on selected objectives.

Lesson 3
Airway Obstruction and Respiratory Arrest

Objectives

At the conclusion of Lesson 3, the instructor will have provided sufficient information, demonstration, and practice to the student, to ensure his/her ability to:

- Describe in narrative the significance of oxygen to body tissues, particuarly the brain:
- List five components of the respiratory systems and the functions of each.
- List three signs of adequate air exchange.
- Demonstrate on a manikin, designed for CPR 5 airway management techniques.
- Demonstrate on a manikin, designed for CPR the AHA method of clearing an obstructed airway in the following situations:
  - Conscious adult
  - Adult who becomes unconscious
  - Unconscious adult
  - Conscious infant
  - Unconscious infant

Requirements

Material: (one for each student)

- JAMA Supplement
- Rationale sheet for AHA standards in techniques used for clearing obstructed airways in the:
  —Conscious adult
  —Unconscious adult
  —Conscious infant
  —Unconscious infant
- First Aid for Laryngectomees.

Equipment:

- Adult resuscitation manikins (one for each four students)
- Infant resuscitation manikins (one for each six students)
- Antiseptic solution and gauze pads.
- Chalkboard
- 16 mm projector
- 35 mm projector
- Movie screen

Illustrations:

- Charts and/or models of:
  —Respiratory system (include lungs, alveoli, diaphragm, pleura)
  —Airway obstruction by tongue
  —Trachea of partial and total neck breathers.

Visual Aids:

- 16 mm film—On obstructed airway maneuvers and artificial respiration according to current AHA standards.
- 35 mm slides AAOS or similar

Instructors:

- Respiratory therapist who is currently certified as an instructor in AHA standards of CPR.
- Assistants certified as CPR Instructors according to AHA standards (one of each six students).

Instructor Preparations/ Tasks

The Instructor Should:

- Review the lesson outline to assure understanding of contents and procedures.

- Review and preview all references and visual aids selected for the lesson by the course administrator.
- Select and prepare appropriate instructional aids in addition to those provided by the course administrator; if desired.
- Be familiar with all visual aid and other equipment to be demonstrated during the lesson.
- Provide the student with a clear understanding of the rationale and techniques for clearing and maintaining an open airway.
- Provide the student with ample practical experience in clearing obstructed airways and artificial ventilation procedures.
- Brief all instructor aides as to their role and responsibilities during the lesson.

Instructor's Notes

Time
(Elapsed)
Actual

Contents

Administrative Matters
(--) 0:05

1. Student attendance.
2. Announcements, etc.

Introduction
(0:05) 0:05

1. **Lesson Coverage**
   a. Design of the respiratory system and how it functions to supply the body with oxygen.
   b. Signs of adequate and inadequate breathing.
   c. Methods of maintaining an open air passage.
   d. Methods of resuscitating the non-breathing patient.
2. **Importance of Oxygen and Respiratory System.**
   a. **All Living Cells.** All living cells of the body require oxygen to survive.
   b. **Brain Cells**
      1) For cells in the brain and nervous system, oxygen is particularly important.
      2) Without oxygen, they will die in 4 to 6 minutes.
      3) If brain cells die, the patient may still live, but will not function at his previous level.

   Respiratory System. The respiratory system provides the means by which oxygen is delivered to the body and carbon dioxide and other causes are removed.
3. **Criticality of Lesson**
   a. A non-breathing patient or a patient with breathing difficulties is a true emergency.
   b. Skills learned in this lesson are critically important.
   c. Speedy and correct performance of these skills may mean the difference between life and death to the patient.
4. **Lesson Objectives.** At the end of the lesson, each student will be able to:
   a. Describe in narrative the significance of oxygen to body tissues, particularly the brain.
   b. List five components of the respiratory systems and the function of each.
   c. List three signs of adequate air exchange.
   d. Demonstrate on a manikin, designed for CPR 5 airway management techniques.
   e. Demonstrate on a manikin, designed for CPR the AHA method of clearing an obstructed airway in the following situations:
      1) Conscious adult
      2) Adult who becomes unconscious
      3) Unconscious adult
      4) Conscious infant
      5) Unconscious infant

The Respiratory System
(0:10) 0:10

1. **Anatomy and Physiology.**
   a. **Pharynx.** Air entering the nasopharynx or oropharynx or food entering the mouth passes to the pharynx.
   b. **Trachea.**
      1) At the base of the pharnyx are two passageways.
      2) The esophagus (in back) takes food and liquids to the stomach.
      3) The trachea (in front) takes air to the lungs and is known as the windpipe.
   c. **Epiglottis**
      1) A valve called the epiglottis guards the opening of the trachea.
      2) It closes when food or liquids are present in the pharynx.
      3) Occasionally foods or liquids get past the epiglottis and cause an emergency situation.

Instructor's Notes

If new instructor, introduce self and instructor aides.

Review lesson coverage and objectives. Emphasize criticality of skills and knowledge covered.

Refer to lesson objectives in the Student Study Guide and review with class.

Refer to illustration of respiratory system. Review design and function of each system element.

d. **Larynx.**

1) The larynx is the first part of the trachea.

2) It is the "voice box" which contains the vocal cords permitting us to speak.

3) The Adam's apple is the front portion of the larynx.

e. **Bronchi.** The trachea divides into two smaller tubes, the right and left bronchi, which enter the lungs.

f. **Lungs.**

1) In the lungs, the bronchi branch into smaller parts until they finally end in millions of tiny air sacs, called alveoli.

2) Oxygen passes through the thin walls of the alveoli to tiny capillaries.

3) Carbon dioxide and other waste gases pass from the capillaries to the alveoli and are breathed out into the atmosphere.

g. **Diaphragm and Rib Muscles**

1) The diaphragm is a muscle that separates the chest cavity from the abdominal cavity.

2) When the diaphragm and rib muscles contract, the chest cavity enlarges and fills with air.

3) When the muscles relax, the space becomes smaller and air ir forced out.

4) The mechanics of breathing can be compared to the operation of a bellows: when it is open, air enters; as it closes, air is forced out.

h. **Pleura**

1) The layer of slippery tissue covering the lungs is known as the pleura. A layer of this tissue also lines the chest cavity. In between is a thin layer of fluid.

2) When the chest expands, the lung is pushed out by ambient air pressure.

3) If either of these pleura is torn, the capability for normal expansion of the lungs is lost.

2. **Control of Breathing**

a. Breathing is controlled by the brain.

b. Although we can hold our breath or breathe faster or deeper if we wish, we cannot maintain these conditions indefinitely.

c. The brain is aware of oxygen and carbon dioxide levels in all parts of the body. When these become abnormal, it will override other conditions (e.g., holding one's breath) and take over operation of the respiratory system.

Signs
(0:20) 0:05

1. **Adequate Breathing**

a. Chest and abdomen RISE and FALL as air is breathed in and out.

b. In most cases, air can be **heard** coming out of the mouth.

c. Air can be FELT coming out of the nose and mouth.

2. **Inadequate Breathing**

a. No air can be heard or felt at the nose and mouth, or the patient is struggling to breathe and muscles on the front of the neck stand out prominently.

b) The breathing is noisy or has a bubbling sound.

c) The breathing is slow; normal breathing rate of adults is between 12 and 10 breaths per minute.

d) The patient is cyanotic.

1) Cyanosis is a grayish-blue discoloration of the skin and membranes around the lips, ears, nailbeds, and sometimes the whole body.

2) For non-whites, the nails, palms of hands and mouth should be examined for signs of cyanosis.

Refer to illustration of alveoli.

Refer to illustration of lungs, rib cage, pleura and diaphragm.

Demonstrate checking a manikin for signs of breathing.

Time
(Elapsed)
Actual

Contents

Opening the Airway
(0:25) 0:10

1. **Obstruction by the Tongue.** In an unconscious patient, muscles relax and the tongue can fall back and obstruct the airway.
2. **Techniques of Care.**
   a. **Head-Tilt Chin Lift Maneuver.** The lower jaw is lifted by the fingers of one hand and moved forward. The other hand presses on the forehead to tilt the head back.
   b. **Head-Tilt Neck Lift Maneuver.** By placing one hand on the patient's forehead and the other under his neck, the head is tilted back and the neck is extended.
   c. **Coma Position.** Placing the non-trauma patient on his side permits the tongue to fall forward and the airway to open. It also permits saliva and mucous to drain out. The neck should be extended.

   Note: These techniques should not be used if a broken neck or upper spinal cord injury is suspected.
3. **Need for Pulmonary Resuscitation.** If breathing does not start spontaneously, artificial respiration should be started immediately.
4. **Suspected Spine Injuries**
   a. **Problem**
      1) A cervical spine injury must be suspected in all accident cases.
      2) Hyperextension of the neck and any movement of the head must be avoided in order to prevent further injury to the spine.
   b. **Technique.** To open the airway, the EMT-A uses a modified jaw-thrust maneuver. The EMT-A should:
      1) Place his hands on either side of the patient's head so the neck is maintained in a fixed, neutral position without being extended.
      2) Use the index fingers to move the jaw forward.

Pulmonary Resuscitation
(0:35) 0:15

1. **Oxygen in Inhaled and Expired Air.**
   a. The atmosphere contains about 21% oxygen.
   b. Of the 21% inhaled, 5% is used by the body and the remainder (16%) is exhaled.
   c. Thus a rescuer can deliver 16% oxygen to a non-breathing patient by using his own exhaled breath.
2. **Mouth-to-Mouth Technique.** Procedures are:
   a. Establish unresponsiveness, shake and shout.
   b. Open the airway—place one hand on the patient's forehead and one on the chin to hyperextend neck.
   c. Establish breathlessness, look, listen and feel.
   d. Pinch the nose closed using thumb and index finger of hand exerting pressure on the forehead.
   e. Open mouth widely, take a deep breath, make a tight seal around the patient's mouth, and blow air into the patient's mouth until the chest rises.
   f. Remove the mouth to allow air to come out of the patient's airway.
   g. To start, give four breaths in rapid succession without waiting for the lungs to deflate completely.
   h. Ventilate the lungs 12 times per minute (once every 5 seconds).
3. **Mouth-to-Nose Technique.**
   a. It may be difficult or impossible to use the mouth-to-mouth technique for many reasons, for example:

Refer to illustration of airway obstruction by the tongue.

According to AHA standards preference should be given to head-tilt chin lift.

Demonstrate on a manikin.

Demonstrate on a student or manikin.

1) There may be a severe injury in the mouth region.

2) The rescuer may not be able to make a tight seal because the patient has a large mouth, no teeth, etc.

b. Procedures are:

1) Establish unresponsiveness and call for help.

2) Tilt the patient's head back with one hand on the forehead.

3) Establish breathlessness.

4) Use the other hand to lift the patient's lower jaw: this seals the lips.

5) Take a deep breath, seal the lips around the patient's nose and blow until the chest rises.

6) Remove mouth and let patient exhale.

7) If necessary, open patient's mouth during exhalation.

8) Give four deep and quick breaths to start and then repeat cycle every 5 seconds as with the mouth-to-mouth technique.

4. **Variations for Infants.** Procedures for infants and small children are:

a. Do not exaggerate the head tilt since forceful backward tilting may obstruct breathing passages.

b. Make a seal around BOTH mouth AND nose.

c. Use less volume to inflate the lungs.

d. Inflate lungs once every 3 seconds.

5. **Variations with Jaw Thrust Maneuver.**

a. For mouth-to-mouth resuscitation, use the cheek to seal the nose—this is difficult and tiring to perform.

b. For mouth-to-nose resuscitation, use the cheek to seal the mouth and do not retract the lower lips with the thumbs.

6. **Gastric Distention**

a. Artificial ventilation frequently causes distention of the stomach.

b. Slight distention should be ignored.

c. If there is marked distention causing ineffective air exchange, moderate pressure should be exerted by one hand between the navel and the rib cage after rolling the patient onto his side.

d. If the patient vomits, sweep or suction the mouth and continue.

Ten-Minute Break
(0:50) 0:10

The Laryngectomee
(Neck Breather)
(1:00) 0:10

1. **The Condition.**

a. Some persons have all or part of their larynx removed through surgery.

b. These persons have a hole (known as a stoma) in the trachea.

c. Those whose complete larynx has been removed breathe only through the stoma.

d. Those whose larynx has been partially removed breathe both through the stoma and through the nose and mouth. In the partial neck breather, a tube graft from just within the stoma connects with the base of the tongue and provides a so-called speaking tube.

e. Laryngectomees are rare; however, the rescuer should be aware that such individuals exist and how to care for them. If there is not exhaled air at nose and mouth, he should always check the patient's neck.

Demonstrate on an infant manikin.

Demonstrate on a manikin.

Demonstrate on a manikin.

Refer to illustration of trachea or partial and total laryngectomees.

2. **Airway Care Procedures.**

   a. Remove all coverings (e.g., scarves, ties, necklaces) from the stoma area.

   b. Clear the stoma of foreign matter.

   c. Make a seal with your mouth over the stoma and blow until the chest rises.

   d. If the chest does not rise, suspect a partial neck breather and seal the nose and mouth with one hand and repeat the process. To seal the nose and mouth, pinch off the nose between the third and fourth fingers, seal the lips with the palm of the hand, place the thumb under the chin and press upward and backward.

   e. When the chest rises, remove your mouth from the stoma and permit the chest to fall.

Airway Obstruction
(1:10) 0:20

1. **Importance of Ventilating Lungs First.**

   a. The rescuer should NOT look for foreign bodies in the airway unless their presence is known or strongly suspected.

   b. Efforts to ventilate the lungs will reveal whether foreign bodies are present.

2. **Loose Material**

   a. Foreign material (blood, mucus, loose teeth, food, etc.) in the airway can prevent successful ventilation of the lungs. If attempts at ventilation are unsuccessful, the EMT-A should:

      1) Turn the patient's head or entire body to one side.

      2) Force the mouth open by applying pressure with the thumb on the upper back molars and with the index finger on the lower back molars—the "cross finger" technique.

      3) Sweep the index and middle fingers of the other hand across the back of the patient's throat.

      4) Roll head back and attempt artificial ventilation.

   b. If a spine injury is suspected, the EMT-A should maintain the patient's head, neck and torso in strict alignment.

3. **Lodged Material**

   a. If the patient is choking from a foreign object caught in his throat, emergency care procedures include back blows and manual thrusts.

      1) **Back Blows.** The EMT-A should deliver four sharp blows with the heel of the hand to the patient's spine between the shoulder blades.

      NOTE: Infants and small children should be picked up, and inverted over the EMT's arm. The EMT-A should deliver light blows between the shoulder blades.

      2) **Abdominal Thrust**

         a) **Procedures.** The EMT-A should:

         Stand behind a standing or seated patient and wrap his arms around his waist.

         Grasp one fist with the other hand and place the fist, thumb side, against the patient's abdomen, slightly above the navel and below the xiphoid.

         Press the fist into the patient's abdomen with a quick inward and upward thrust.

         NOTE: Do not use on infants.

         b) **Variation.** The technique can be performed on a supine patient by placing one hand on the other, placing the heel of the bottom hand on the abdomen as above, and pressing into the abdomen with a sharp inward and upward thrust.

      3) **Chest Thrust.** The chest thrust can be used when the patient is an infant, markedly obese or pregnant or if abdominal thrusts prove to be ineffective.

         a) **Procedure.** The EMT-A should:

Instructor's Notes

Demonstrate on a manikin.

Demonstrate on self or manikin. Ask each student to perform technique on himself.

Demonstrate on a manikin and student.

Demonstrate on a manikin.

Ask each student to demonstrate HAND POSITION on fellow student. Do NOT perform actual maneuver.

Demonstrate on a manikin.

Demonstrate on a manikin.

Stand behind a standing or seated patient and wrap his arms around the patient's lower chest.

Grasp one first with the other hand and place the fist, thumb side, against the lower sternum above the xiphoid.

Press the fist into the patient's chest with a quick backward thrust.

b) **Variation.** For a supine patient, the EMT-A should:

Place the hands in the correct position for CPR and deliver compressions in the same manner.

4) **Combined Procedures**

a) **Conscious Adult.** Identify complete obstruction. Alternate 4 back blows and 4 manual thrusts until effective or patient loses consciousness.

b) **Patient Becomes Unconscious.**

Place patient supine. Call for help. Open airway: attempt ventilation; if unsuccessful: Activate EMS system. Give four back blows. Perform four manual thrusts. Check for foreign body—and sweep with finger. Attempt ventilation and repeat as necessary.

c) **Patient Found Unconscious**

Establish unresponsiveness. Call for help. Open airway; establish breathlessness. Attempt to ventilate. If unsuccessful, reposition head and try again. Activate EMS system. Give four back blows. Perform four manual thrusts. Check for foreign body and sweep. Attempt ventilation and repeat as necessary.

Practice (Groups of no more than 6 Students per Manikin)
(1:30) 1:15

1. Each student should practice the following skills on an adult manikin:
   a. Head-tilt chin-lift maneuver.
   b. Head-tilt neck-lift maneuver.
   c. Modified jaw-thrust maneuver for patient with a suspected spine injury.
2. Each student should practice mouth-to-mouth and mouth-to-nose resuscitation of an adult manikin with and without a spine injury using the following steps:
   a. Establishing unresponsiveness.
   b. Call for help.
   c. Opening airway: establishing breathlessness.
   d. Ventilating lungs; if unsuccessful, repositioning head and reventilating.
   e. Dislodging obstructions (by alternating blows and manual thrusts) checking for foreign matter.
   f. Ventilating lungs.
   g. Repeating "e" and "f" as necessary.
   h. Maintaining ventilation.
3. Each student should practice resuscitating an infant manikin using the following steps:
   a. Establish unresponsiveness.
   b. Call for help.
   c. Opening airway; establishing breathlessness.
   d. Ventilating lungs.
   e. Dislodging obstruction; checking for foreign material.
   f. Ventilating lungs.
   g. Repeating "e" and "f" as necessary.
   h. Maintaining ventilation.

NOTE: All students not working directly on a manikin should watch students who are, and should attend to the instructor's critique.

Instructor's Notes

Ask each student to demonstrate HAND POSITION on fellow student. Do NOT perform actual maneuver.

Demonstrate on a manikin.

FOLLOW LATEST HEART ASSOCIATION PROCEDURES.

Demonstrate lightly on a person.

Demonstrate on a manikin.

Demonstrate on a manikin.

Divide class into groups of 6.

Monitor and critique each student. Permit student to practice until they can perform each step without error.

Provide a 10-minute break during the practice session.

Follow latest Heart Association procedures. Include conscious and unconscious adult procedures.

FOLLOW LATEST HEART ASSOCIATION PROCEDURES.

Time (Elapsed) Actual	Contents
	NOTE: The instuctor should use the practice period not only for perfection of skills but also for emphasis of all lesson coverage required for students to achieve the lesson objectives.
Summary and Questions (2:45) 0:15 (3:00)	1. Class questions or comments on the lesson objectives. 2. Demonstration by selected class members of achievement of lesson objectives.

Instructor's Notes

Question class members on lesson objectives.

Lesson 4
Cardiac Arrest

Objectives

At the conclusion of Lesson 4, the instructor will have provided sufficient information, demonstration, and practice to the student, to ensure his/her ability to:

- List four components of the circulatory system and the function of each.
- List two specific signs of cardiac arrest.
- List three possible complications of CPR.
- List three instances when CPR, once initiated, may be terminated.
- Demonstrate on a manikin, the current AHA sequences and techniques for the following CPR cases:
  - —single rescuer (adult and infant)
  - —infant and adult CPR while transferring to an ambulance

Requirements

Material: (one for each student)

- Rationale sheets for AHA standards in CPR sequences and techniques used for the following cases:
  - —single rescuer (adult)
  - —team rescue (adult)
  - —single rescuer (infant)
  - —infant and adult CPR while transferring to an ambulance

Equipment:

- Adult resuscitation manikin (one for each two students)
- Infant resuscitation manikin (one for each six students)
- Antiseptic solution and gauze pads.
- Ambulance cot (one for each 10 students)
- Chalkboard
- 35mm projector
- 16mm projector
- Movie screen

Illustrations:

- Charts and/or models of:
  - —circulatory system (include heart, lungs, vessels)
  - —signs and symptoms of cardiac arrest

Visual Aids:

- 16mm film—on CPR according to American Heart Association Standards
- 35mm slides—AAOS or similar

Instructors:

- Registered Nurse or Registered Respiratory Therapist certified as a CPR instructor to AHA standards.
- Assistants trained in CPR (one for each six students)

Instructor Preparation/ Tasks

The Instructor should:

- Review the lesson outline to assure understanding of contents and procedures.
- Review and preview all references and visual aids selected for the lesson by the course adminstrator.
- Select and prepare appropriate instructional aids in addition to those provided by the course administrator; if desired.
- Be familiar with all visual aids and other equipment to be demonstrated during the lesson.
- Provide the student with a clear understanding of the rationale and techniques for administering efficient CPR.
- Provide the student with ample practical experience in all aspects of CPR.
- Brief all instructor aides as to their roles and responsibilities during the lesson.

Time (Elapsed) Actual — **Contents**

Administrative Matters'(--) 0:05)

1. Student attendance.
2. Announcements, etc.

Introduction
(0:05) 0:05

1. **Lesson Coverage.**
   a. Design of the circulatory system and heart and how they function to provide the body cells with oxygen.
   b. Physical structure of the chest cavity and organs located near the heart.
   c. Signs of cardiac arrest.
   d. Technique of cardiopulmonary resuscitation.
   e. Complications if cardiopulmonary resuscitation is not performed correctly.
2. **Importance of Oxygen.** Re-emphasis of importance of oxygen to body tissues, particularly the brain.
3. **Criticality of Lesson.** As with the previous lesson, cardiac arrest represents an immediate life threat; therefore:
   a. Skills learned in this lesson are critically important.
   b. Correct performance of these skills may mean the difference between life and death to the patient.
4. **Lesson objectives.** At the end of the lesson, each student will be able to:
   a. List four components of the circulatory system and the function of each.
   b. List two specific signs of cardiac arrest.
   c. List three possible complications of CPR.
   d. List three instances when CPR, once initiated, may be terminated.
   e. Demonstrate on a manikin, the current AHA sequences and techniques for the following CPR cases:
      1) single rescuer (adult and infant)
      2) team rescuer (adult)
      3) infant and adult CPR while transferring to an ambulance

The Circulatory System
(0:10) 0:10

1. The circulatory system consists of the heart and a series of tubes that carry blood throughout the body.
2. The tubes include:
   a. **Arteries** that carry blood rich in oxygen and other materials TO other body cells.
   b. **Veins** that carry deoxygenated blood and waste products FROM the body cells.
   c. **Capillaries** through which oxygenated and deoxygenated blood are exchanged with the body cells.
3. In combination with the respiratory system, the circulatory system serves to provide the body with the oxygen needed for life.

The Heart
(0:20) 0:20

1. **Design of the Heart**
   a. The heart is a muscular organ approximately the size of a man's clenched fist.
   b. A wall (septum) divides the heart into two upper chambers (atriums) and two lower chambers (ventricles).
2. **The Heart** as a Pump
   a. The heart is a two-sided pump.
   b. The left side of the heart receives oxygenated blood from the lungs and pumps it out to all body parts through a system of arteries.
   c. The right side of the heart receives from the veins blood that has circulated through the body and pumps it to the lungs to be re-oxygenated.
   d. A system of one-way valves keeps blood moving in the proper direction and prevents backflow of the blood.

Instructor's Notes

If new instructor, introduce self and instructor aides.

Review lesson coverage and objectives. Emphasize criticality of skills and knowledge covered.

Refer to lesson objectives in the Student Study Guide and review with class.

Refer to illustration of circulatory system. Describe design and function of system elements.

Discuss the exception of pulmonary arteries and veins.

Refer to illustration of design of the heart.

Time (Elapsed) Actual | **Contents**

3. **Location**
   a. The heart is located in the chest cavity under the sternum and the lungs. Pressure on the sternum will compress the heart and produce an artificial circulation.
   b. The liver and spleen are located below the heart—the liver to the right and center and the spleen to the left.
   c. Laceration of the lungs, liver or spleen could prove fatal to the patient—the first due to associated breathing difficulties and the others due to severe bleeding since they both have a large blood supply. It is therefore especially critical that the skill learned in this lesson be learned correctly.

Signs of Cardiac Arrest
(0:40) 0:05

1. The patient is not breathing.
2. The patient has no carotid pulse.

Technique of Cardiopulmonary Resuscitation
(0:45) 0:60

1. **General procedures.**
   a. **Firm Surface.** Place patient on a firm surface, such as the ground or a spine board: CPR cannot be performed with the patient in a sitting position. Elevation of the lower extremities, while keeping the rest of the body horizontal, MAY promote venous return and aid circulation of the blood during CPR. Pneumatic Counter Pressure Device Trousers may assist in venous return as well as differentially shunting blood to the brain from the abdomen and lower extremities. Patient must be supine.
   b. **Ventilation.** Adequately ventilate the lungs with oxygen since compression without ventilation is useless.
   c. **Location of Hands.** Locate the hands on the lower half of the sternum avoiding the xiphoid process. Use sternal notch to locate position.
   d. **Positioning of Hands.** Place the heel of one hand on top of the other, with fingers raised so that no contact is made with the ribs.
   e. **Positioning of Body.** Lean over the patient with elbows straight so that the weight of your body is assisting in compression of the sternum.
   f. **Amount of Compression.** For an adult, compress the sternum about 1 1/2 to 2 inches vertically downward. Compressions should be 50% compression, 50% relaxation.
   g. **Rate of Compression.** Compress the sternum approximately 80 times per minute for single rescuer and 60 times per minute for team rescuer.
2. **One-Man Technique**
   a. Establish unresponsiveness.
   b. Call for help.
   c. **Airway.** Assure an open airway.
   d. **Breathlessness.** Look, listen and feel.
   e. **Ventilation.** Ventilate the lungs quickly four times.
   f. **Pulse.** Check carotid.
   g. Activate EMS system.
   h. **Compression.** Perform 15 compressions with 2 quick and full ventilations.
   i. **Ventilations.** Stop compression and give two quick full ventilations.
   j. **Alternations.** Alternate 15 compressions with 2 quick and full ventilations.
   k. **Recheck.** Pulse after 1 minute.

Instructor's Notes

Refer to illustration of chest cavity showing ribs, heart, lungs, liver, spleen.

Ask a member of the class to give the signs of respiratory arrest. Have each class member find his own carotid pulse and that of another student.

Include a 10-minute break in this section after approximately one hour.

Demonstrate turning the patient who is prone.

Demonstrate on a manikin.

Demonstrate on a manikin.

Demonstrate on a manikin.

Demonstrate on a manikin.

Demonstrate on a manikin. Follow latest Heart Association procedures.

3. **Two-Rescuer Technique.**
   a. **Establish Unresponsiveness.**
   b. Call for help.
   c. **Airway.** Ventilator assures an open airway.
   d. **Establish Breathlessness.**
   e. **Ventilation.** Ventilator ventilates the lungs quickly four times.
   f. **Pulse.** Check carotid.
   g. **Compression.** Second rescuer performs five compressions of the sternum at the rate of 60 per minute. Counting "One-One-thousand", "Two-One-thousand", "Three-One-thousand", etc., will aid the rescuer in maintaining a rate of one compression per second.
   h. **Alternations.** Ventilator interposes one breath after each five compressions.
   i. **Changing Positions.** Compressor calls for a switch when needed. Ventilator gives breath on fifth count and moves to chest. Compressor checks pulse, ventilates and signals to begin.
4. **Infants and Children**
   a. For small children 1 to 8 years, only the heel of one hand is used and the compression should be 1 to 1 1/2 inches, 80 per minute.
   b. For infants, less than one year, only the tips of the index and middle fingers are used and the compression should be 1/2 to 1 inch. 100 per minute. Use brachial pulse check.
   c. Pressure should be exerted over the mid-sternum.
   d. Additional support beneath the back will be required for infants and small children.
5. **Second Rescuer Entering.**
   a. Single rescuer CPR initiated.
   b. Second rescuer appears and identifies self.
   c. Checks pulse for effective compressions.
   d. Calls for stop to check for spontaneous return of pulse.
   e. Begins two rescuer CPR.
6. **Signs of Effective CPR**
   a. A carotid pulse can be felt (when working as a team, the ventilator should feel a pulse with each compression).
   b. Pupils constrict when exposed to light.
   c. Skin color improves.
   d. There may be spontaneous gasping respirations.
   e. There may be spontaneous movement of the patient's arms or legs.
   f. The heart may resume normal beating.
   NOTE: CPR produces a pumping activity that is only 25% to 33% as effective as the action of a normal heart. Thus 90-100% oxygen should be delivered to all patients who have sustained a cardiac arrest as soon as it is available.
7. **CPR Interruption.** CPR should not be interrupted for more than 5 seconds unless it is necessary to move a patient up and down a stairway. Such interruptions should not exceed 15 seconds.
8. **Complications**
   a. Review of the structure of the chest cavity and location of organs proximal to the heart.

Instructor's Notes

Demonstrate on a manikin. Use class member or assistant instructor as second rescuer. Follow latest Heart Association procedures.

Demonstrate on a manikin. Use class member or assistant instructor as second rescuer. Follow latest Heart Association procedures.

Describe and demonstrate system for effecting a smooth change in positions.

Demonstrate on an infant resuscitation manikin. Follow latest Heart Association procedures.

Refer to illustration of chest cavity showing ribs, heart, lungs, liver, spleen.

b. Emphasize the importance of correct performance of the technique and dangers to the patient whether performed correctly or not. The following complications may result if it is not performed correctly, that is:

1) Fractured ribs.
2) Fractured sternum.
3) Lacerations of the liver, spleen, lungs or heart.
4) Damage to the pleura resulting from broken ribs.

9. **Beginning and Terminating CPR**

a. CPR is not indicated for a patient known to be in the terminal stages of an incurable condition, if signed physician orders are present.

b. Once started, CPR should be terminated only when one of the following occurs:

1) The patient's heart resumes normal beating.
2) A physician or other properly trained person responsible for emergency medical services assumes responsibility for the patient.
3) The rescuer is exhausted and unable to continue.
4) The patient is pronounced dead by a physician, coroner or other individual with the legal authority to do so.

Practice (Groups of No More Than 6 Students per Manikin)
(1:45) 0:60

1. Each student should practice one-rescuer cardiopulmonary resuscitation on an adult manikin using the following steps:

a. Establishing unresponsiveness.
b. Call for help.
c. Open airway.
d. Establish breathlessness.
e. Ventilate the lungs.
f. Establish pulselessness.
g. Activate EMS system.
h. Perform one-man CPR.

NOTE: The instructor should require one or more students in each group to clear the airway and remove an obstruction from the airway.

2. Each student should practice one-rescuer cardiopulmonary resuscitation on an infant manikin using the following steps:

a. Establish unresponsiveness.
b. Call for help.
c. Open airway.
d. Establish breathlessness.
e. Ventilate the lungs.
f. Establish pulselessness, brachial.
g. Activate EMS system.
h. Perform CPR.

3. Each student should practice two-rescuer cardiopulmonary resuscitation on an adult manikin using the following steps:

a. Establish unresponsiveness.
b. Call for help.
c. Open airway.
d. Establish breathlessness.
e. Ventilate the lungs.
f. Establish pulselessness.

Divide class into groups of 6.

Monitor and critique each student. Permit students to practice until they can perform each step without error. Follow latest Heart Association procedures.

Provide a ten-minute break during the practice session.

Time (Elapsed) Actual	**Contents**
	g. Activate EMS system. h. Perform two-man CPR. i. Change positions. 4. Each student should practice two-rescuer cardiopulmonary resuscitation on an adult manikin positioned on a moving stretcher using the steps in 3, above. NOTE: All students not working directly on a manikin should watch students who are and should attend to the instructor's critique. NOTE: The instructor should use the practice period not only for perfection of skills but also for emphasis of all lesson coverage required for students to achieve the lesson objectives.
Summary and Questions (2:45) 0:15 (3:00)	1. Class questions or comments on the topic of the lesson. 2. Demonstration by selected class members of achievement of lesson objectives.

Question class members on selected objectives.

Lesson 5
Manikin Practice and Certification

Objectives

At the conclusion of Lesson 5, the instructor will have provided sufficient information, demonstration, and practice to the student, to ensure his/her ability to:

- Certify to current AHA standards in all areas required of a CPR-Basic Rescuer.

Requirements

Material: (one for each student)

- AHA-CPR Basic Rescuer written exam.
- AHA-CPR Proficiency Test sheets in all areas required for Basic Rescuer certification.
- AHA-CPR Basic Rescuer Class Roster (1 copy only).

Equipment:

- Adult resuscitation manikin (one for each four students).
- Infant resuscitation manikin (one for each six students).
- Antiseptic solution and gauze pads.

Instructors:

- Currently certified instructors (one for each six students) in AHA Standards of CPR.

Instructor Preparations/Tasks

The Instructor Should:

- Review the lesson outline to assure understanding of contents and procedures.
- Be familiar with all visual aids and other equipment to be demonstrated during the lesson.
- Provide the student with ample practical experience to ensure his/her competency level to be adequate to certify as a CPR: Basic Rescuer to American Heart Association standards.
- Brief all instructor aides to their roles and responsibilities during the lesson.

Time (Elapsed) Actual | **Contents**

Administrative Matters
(--) 0:05

1. Student attendance.
2. Announcements, etc.

Introduction
(0:05) 0:05

1. **Lesson Coverage.**
    a. Basic rescuer certification
        1) Written exam
        2) One rescuer CPR
        3) Two rescuer CPR
        4) Infant CPR
        5) Adult obstructed airway procedures
        6) Infant obstructed airway procedures.
2. **Lesson Objectives.**
    a. The student will certify according to AHA standards in all areas required of a CPR-Basic Rescuer.

Written Exam
(0:10) 0:30

1. Written exam based on AHA guidelines should be administered.

Practical Performance
(0:40) 3:10

1. Each student must perform all skills required for AHA certification as a Basic Rescuer. Proficiency requirements should be established by the Lead instructor.
2. American Heart Association Performance tests are included as Appendix A of these lesson plans.

Summary and Questions
(3:50) 0:10

1. Class questions or comments on the topic of the lesson.
2. Demonstration by selected class members of achievement of lesson objectives.

(4:00)

Instructor's Notes

If new, instructor introduces self and instructor aides.

A portion of the class may take their written exam while others begin on practical performance procedures.

Students may be rotated through stations to expedite the certification process. Manikins should be available for remedial practice.

Duplicate as necessary to evaluate each student.

Question class members on selected objectives.

Lesson 6
Practical Use of Airway Adjuncts

Objectives

At the conclusion of Lesson 6, the instructor will have provided sufficient information, demonstration, and practice to the student to ensure his/her ability to:

- List the indications, purpose and functions of the following airways:
  —Oropharyngeal airways
  —Nasopharyngeal airways
  —Portable suction
  —Oxygen equipment and delivery systems: nasal cannula, simple face mask, venturi mask, etc.
  —Pocket valve mask
  —Bag valve mask
- Demonstrate on manikin the correct sequence and techniques for using the following airway adjuncts in stationary and moving patient circumstances:
  —Oropharyngeal airways
  —Nasopharyngeal airways
  —Portable suction
  —Oxygen equipment and delivery systems: nasal cannula, simple face mask, venturi mask, etc.
  —Pocket mask system
  —Bag valve mask system

Requirements

Equipment: (one for each six students)

- Adult resuscitation manikins
- Infant resuscitation manikins
- Oropharyngeal airways
- Nasopharyngeal airways
- Portable suction unit
- Oxygen equipment (include cylinder, regulator, flowmeter and humidifier)
- Nasal cannula
- Face mask/bag
- Venturi mask
- Pocket mask/oxygen inlet valve
- Bag-valve-mask system
- Demand valve resuscitation
- Appropriate quantities of lubricant jelly and antiseptic solution and gauze pads for ALL equipment
- Chalkboard
- 35mm projector
- Movie screen

Illustrations:

- Chart/model depicting proper insertion of:
  —oropharyngeal airway
  —nasopharyngeal airway

Visual Aids:

- 35mm slides—AAOS or similar

Instructor:

- Respiratory therapist trained in CPR to AHA Standards.

Instructor Preparation/Tasks

The Instructor Should:

- Review the lesson outline to assure understanding of contents and procedures.
- Review and preview all references and visual aids selected for the lesson by the course administrator.
- Select and prepare appropriate instructional aids in addition to those provided by the course administrator; if desired.
- Be familiar with all visual aids and other equipment to be demonstrated during the lesson.
- Provide the student with a clear understanding of the use and operation of all mechanical aids to breathing that he/she may encounter while providing patient care.
- Provide the student with ample practical experience in the operation of all mechanical aids to breathing demonstrated in the lesson.
- Brief all instructor aides as to their roles and responsibilities during the lesson.

Time
(Elapsed)
Actual

Contents

Administrative Matters
(--) 0:05

1. Student attendance.
2. Announcements, etc.

Introduction
(0:05) 0:05

1. **Lesson Coverage.** Purpose, design features and procedures for using the following equipment:
    - a. Oropharyngeal airways
    - b. Nasopharyngeal airways
    - c. Portable suction equipment
    - d. Oxygen equipment
    - e. Oxygen delivery systems
        - 1) Nasal cannula
        - 2) Face mask
        - 3) Mask and bag
        - 4) Venturi mask
    - f. Oxygen and ventilation systems
        - 1) Pocket mask system
        - 2) Bag-valve-mask system
        - 3) Demand-valve system

2. **Importance of Lesson**
    - a. A person can be given basic life support without the use of mechanical aids.
    - b. In many cases, however, mechanical aids make airway care and ventilation easier and more effective.
    - c. If oxygen is required, mechanical aids are a necessity.
    - d. Oxygen is an important aid to any patient with a breathing difficulty.
    - e. Demonstrate how to provide 90-100% oxygen with reservoir device.

4. **Lesson Objectives.** At the end of the lesson, each student will be able to:
    - a. List the indications, purpose and functions of the following airways:
        - 1) Oropharyngeal airways
        - 2) Nasopharyngeal airways
        - 3) Portable suction
        - 4) Oxygen equipment and delivery systems: nasal cannula, simple face mask, venturi mask, etc.
        - 5) Pocket valve mask
        - 6) Bag-valve mask
    - b. Demonstrate on a manikin the correct sequence and techniques for using the following airway adjuncts in stationary and moving patient circumstances:
        - 1) Oropharyngeal airways
        - 2) Nasopharyngeal airways
        - 3) Portable suction
        - 4) Oxygen equipment and delivery systems: nasal cannula, simple face mask, venturi mask, etc.
        - 5) Pocket mask system
        - 6) Bag valve mask system

Oropharyngeal Airways
(0:10) 0:05

1. **Purpose**
    - a. Oropharyngeal airways can be used to maintain an open airway on deeply unresponsive patients.

Instructor's Notes

If new, instructor introduces self and instructor aides.

Review lesson coverage and objectives. Display each piece of equipment as it is mentioned.

Refer to lesson objectives in the Student Study Guide and review with class.

Display adult, child and infant sizes.

b. They should not be used on responsive patients since they may cause vomiting or spasm of the vocal cords.

2. **Use**
   a. Care is required in inserting the airway since it can force the tongue back into the pharynx and cause an obstruction.
   b. Procedures of inserting the airway are as follows:
      1) Select proper size: corner of mouth to earlobe.
      2) Open the patient's mouth using the cross-finger technique.
      3) Insert airway with the tip facing upward (toward the roof of the patient's mouth).
      4) After contact with soft palate, rotate it 180 degrees and insert it until the flange rests on the lips or teeth (the curve of the airway follows the patient's tongue).
      NOTE: Use of a tongue blade to depress the tongue may ease correct insertion of the airway.

Nasopharyngeal Airways
(0:15) 0:05

1. **Purpose.** A nasopharyngeal airway is not likely to stimulate vomiting and may be used on a conscious patient who cannot maintain an open airway.
2. **Use**
   a. Select proper size: nose to earlobe.
   b. Lubricate the airway.
   c. Insert it through a nostril following the floor of the nose until the flange rests against the nostril.

Suction Unit
(0:20) 0:05

1. **Purpose.** A suction unit permits removal of blood and other liquid materials from the airway.
2. **Design Requirements—Portable Unit**
   a. The unit should be fitted with a wide-bore, thick-wall, non-kinking tubing and semi-rigid or rigid suction tips.
   b. Multiple sterile, disposable suction catheters of various sizes should permit suctioning of mouth, pharynx and stoma.
   c. Rigid pharyngeal suction tips (tonsil suction tips) are best for suctioning the pharynx but may induce vomiting in awake or semi-awake persons.
   d. The collection bottle should be non-breakable, and a supply of water should be available for rinsing tubes and catheters.
   e. The vacuum pressure and flow should be adequate for pharyngeal suction.
2. **Use**
   a. Inspect unit to insure that all parts are assembled.
   b. Switch on suction clamp tubing and assure that pressure dial registers over 300 mm Hg.
   c. Attach flexible catheter or rigid tonsil sucker.
   d. Open the mouth with the cross-finger technique.
   e. Insert the catheter into the pharynx—length of insertion is distance from mouth to lobe of ear. Insert rigid tonsil sucker with convex side along the roof of the mouth until the pharynx is reached.
   f. Apply suctioning only after catheter is in position—suctioning should not exceed 15 seconds.

Instructor's Notes

Explain condition and seriousness of vocal cord spasm and aspiration.

Refer to illustration of properly inserted oropharyngeal airway.

Display nasopharyngeal airways. Describe aseptic procedures.

Refer to illustration of properly inserted nasopharyngeal airway.

Display suction unit.

Refer to each component.

Demonstrate use of equipment and suction procedures on manikin.

Describe aseptic procedures.

Reduce pressure for children.

Demonstrate determining distance of insertion on manikin.

Time (Elapsed) Actual | **Contents**

Oxygen
(0:25) 0:15

1. **Patients Needing Oxygen**
   - a. **Patients Suffering a Cardiac Arrest**
     - 1) As indicated previously, CPR produces a pumping activity that is only 25% to 33% as effective as the action of a normal heart; thus, oxygen delivery to the blood is impaired.
     - 2) The patient receiving pulmonary resuscitation or CPR is therefore oxygen-deficient and should receive oxygen of 100% concentration as soon as it is available. However, do not delay initial resuscitation.
   - b. **Other Patients.** Several medical and physical conditions result in hypoxia in which there is an inadequate amount of oxygen available to meet the body's needs. These medical conditions will be discussed in subsequent lessons. In general, most patients with respiratory or circulatory difficulties will benefit from supplemental oxygen.
2. **Dangers**
   - a. Oxygen supports combustion.
   - b. In some chronic disease states like emphysema, administration of oxygen can decrease respiration since, in these patients, a low blood oxygen level is the stimulus for respiration.
   - c. Avoid contact with petroleum products.
2. **Oxygen Equipment**
   - a. **Cylinders**
     - 1) Oxygen is usually supplied as a compressed gas in seamless steel or alloy cylinders.
     - 2) Cylinders of E size and smaller have outlet valves designed to accept pressure-reducing gages of the yoke type which have a pin-indexing safety attachment system.
     - 3) Cylinders larger than E size are equipped with threaded gas-outlet valves which will not accept a regulator valve unless it fits the specific outlet.
     - 4) Thus the cylinders are designed so that an oxygen line or regulator cannot mistakenly be attached to a cylinder of another compressed gas.
     - 5) Pressurized cylinders must be handled carefully since their contents are under pressure.
   - b. **Pressure Regulators and Flowmeters.**
     - 1) Pressure of a full oxygen cylinder will be 2000 to 2200 psi; it must be reduced to 40–70 psi before administration to a patient.
     - 2) Flowmeters are typically permanently attached to the pressure regulator; they permit oxygen to be delivered to the patient at the desired rate.
     - 3) Since oxygen in a compressed cylinder is an extremely dry gas, a humidifier should be attached to the flowmeter to prevent excessive dryness of the patient's mucous membranes if prolonged administration of oxygen is anticipated.
   - c. **Operating Procedures.** The EMT-A should:
     - 1) Remove protective cap.
     - 2) "Crack" the valve.
     - 3) Attach regulator-flowmeter.
     - 4) Attach humidifier.
     - 5) Reduce the pressure.
     - 6) Regulate the flow.
     - 7) Connect administering apparatus.
     - 8) Shut down the apparatus.

Give examples.

Discuss safe practice relative to use of oxygen.

Identify normal stimulus for respiration.

Display oxygen cylinder.

Display and describe indexing systems for available oxygen equipment.

Display and describe pressure regulator, flowmeter, and humidifier.

Demonstrate procedures.

Time (Elapsed) Actual	**Contents**
Equipment for Oxygen Delivery (0:40) 0:10	1. **Nasal Cannula.** a. Oxygen concentrations in inspired air can range from 24 to 50%. b. A mouth breather or person with a nasal obstruction derives minimal benefit from this method of oxygen administration. 2. **Face Mask.** With flowrates of 6 to 10 liters per minute, oxygen concentrations of 35 to 60% can be obtained in inspired air. Infant size mask should be used on a stoma. 3. **Mask and Bag.** a. Gas inflow must be set at whatever level will prevent complete collapse of the bag. b. Oxygen concentration in excess of 60% in inspired air can be obtained with this system. 4. **Venturi Masks.** They are designed to deliver specific concentrations of inspired oxygen of either 24, 28, 35 or 40%.
Ten-Minute Break (0:50) 0:10	
Equipment for Ventilation and Oxygen Delivery (1:00) 0:30	1. **Pocket-Mask With Oxygen Inlet Valve System.** a. **Purpose** 1) This is a ventilation system which permits additional oxygen to be delivered to the non-breathing patient. 2) Ten liters of oxygen per minute will provide the patient with approximately 50% oxygen; 15 liters per minute, with approximately 80% oxygen. b. **Use** 1) Stand behind patient's head and open airway with modified jaw thrust, use oropharyngeal airway. 2) Attach oxygen. 3) Apply mask to the face with the apex over the bridge of the nose and the base between the lips and chin. 4) Place thumbs on dome of mask and hold patient's mandible with remaining fingers. 5) Maintain an airtight seal with firm pressure between thumb and fingers. 6) Maintain an open airway by modified jaw thrust. 7) Breathe through open port in chimney. 8) Remove mask and allow patient to exhale passively. **Note:** Adult mask may be inverted for use on a child. Infant size mask can be used on the stoma. 2. **Bag-Valve-Mask Resuscitator** a. **Purpose** 1) This system when used with a reservoir permits delivery of high concentrations of oxygen to the patient. 2) It should be used with an oropharyngeal airway in place. b. **Design Requirements** 1) The bag should be self-refilling without sponge rubber. 2) It should contain a non-jam valve system calibrated at 15 liters per minute oxygen-inlet flow, which cannot be incorrectly reassembled. 3) The face mask should be transparent plastic with an air-filled or contoured resilient cuff. 4) It should contain a no-pop-off valve except for pediatric models.

Instructor's Notes

Display equipment and demonstrate use on manikin. Describe aseptic procedures.

Display equipment and demonstrate use on a manikin. Describe aseptic procedures.

Display equipment and demonstrate use on manikin. Describe aseptic procedures.

Display equipment and demonstrate use on a manikin. Describe aseptic procedures.

Display equipment, describe design requirements and demonstrate use on a manikin. Describe aseptic procedures.

79

5) Fittings should be standard 15 mm/22 mm.

6) The valve should be non-rebreathing.

7) It should have an ancillary oxygen inlet.

8) It should operate in cold weather.

9) Reservoir must be available.

c. **Use**

1) Select correct mask size.

2) Inflate collar if necessary.

3) Open airway with cross-finger technique and insert oropharyngeal airway.

4) Apply mask over the patient's face with its apex over the bridge of the nose and its base between the lower lip and chin.

5) Hold the mask firmly in position by placing three fingers of one hand on the mandible between the angle and the lobe of the ear while the index finger is held over the lower portion of the mask and the thumb over the upper portion of the mask.

6) With the other hand, compress the bag fully in a rhythmical manner once every five seconds.

d. **Comments on Use**

1) Better volumes for ventilation can be delivered by direct mouth-to-mouth resuscitation but supplemental oxygen cannot be provided.

2) Better volumes for ventilation can be delivered by the mouth-to-mask system but the latter delivers only up to 80% oxygen.

3) Inadequate tidal volume may be the result of improper seal or incomplete bag compression.

4) If chest does not rise and color improve in a non-breathing patient, select an alternate method.

3. **Demand-Valve Resuscitator**

a. **Purpose**

1) This system can be used to assist ventilation or control it.

2) It can deliver 100% oxygen.

b. **Design Requirements**

1) Valve can open in response to patient's inspiratory effort or by manual control of EMT-A.

2) Demand-valve units in ambulances must be equipped with manual control.

3) Valves will operate effectively in a supply-pressure range of 40 to 80 psi.

c. **Use**

1) Present pressure initially at 10 to 20 cm H_2O or 8 to 15 mm Hg. Increase as necessary during use.

2) Apply mask. Assure an airtight fit between patient's face and mask.

3) Ventilate patient by periodically depressing valve button. Monitor manual control at all times.

Practice (Groups of No More Than 6 Students Per Manikin)

(1:30) 1:15

1. Each student should practice the following skills on adult and infant manikins.
   a. Inserting oropharyngeal airways.
   b. Inserting nasopharyngeal airways.
   c. Setting up, using and closing down suction devices.
   d. Setting up, administering and closing down oxygen equipment. Administration should be by all available equipment, that is, nasal cannula, face mask, mask and bag and/or venturi mask.

Display equipment, describe design requirements and demonstrate use on a manikin. Describe aseptic procedures.

Discuss the problems with excess esophageal opening pressure and gastric distention.

Divide class into groups of 6. Monitor and critique each student. Permit students to practice until they can perform each step without error. Provide a 10-minute break during the practice session.

Time (Elapsed) Actual	**Contents**
	2. Each student should perform on an adult manikin one and two-man CPR and simultaneous administration of oxygen using the pocket mask with oxygen inlet valve and the bag-valve-mask resuscitator. **Note:** All students not working directly with the equipment should watch students who are and should attend to the instructor's critique. **Note:** The instructor should use the practice period not only for perfection of skills but also for emphasis of all lesson coverage required for students to achieve the lesson objectives.
Summary and Questions (2:45) 0:15	1. Class questions or comments on the topic of the lesson. 2. Demonstration by selected class members of achievement of lesson objectives.
(3:00)	

Question class members on selected objectives.

Lesson 7
Bleeding and Shock

Objectives

At the conclusion of Lesson 7, the instructor will have provided sufficient information, demonstration, and practice to the student, to ensure his/her ability to:

- List four methods of controlling bleeding.
- Demonstrate control of external bleeding by use of direct pressure, elevation and pressure points.
- Describe when and how to use a tourniquet.
- List four signs of internal bleeding.
- List six types of shock.
- List six signs and/or symptoms of shock.
- Demonstrate and describe five steps in the treatment and prevention of shock.
- Perform a primary survey.
- Perform a secondary survey.
- Obtain and record a blood pressure by both auscultation and palpation.

Requirements

Equipment: (one for each student) unless otherwise noted.

- Stethescope and Sphygmomanometer (one for each six students).
- 4 × 4 gauze pads.
- Universal dressings.
- Roller bandages.
- Self-adherent bandages.
- Occlusive dressing.
- Triangular bandage.
- Adhesive tape.
- Tourniquet.
- Bandage scissors.
- Blanket (one for each two students).
- Pillow (one for each two students).
- Chalkboard.
- 35mm projector.
- Movie screen.

Illustrations:

- Chart/Transparency showing:
  —types of shock
  —signs and symptoms of shock
  —treatment of shock
  —check list, conduct primary and secondary survey

Visual Aids:

- 35mm slides AAOS or similar

Instructors:

- A physician knowledgeable in all areas of subject matter covered in this lesson.
- One for each six students during practice.

Instructor Preparation/ Tasks

The Instructor Should:

- Review the lesson outline to assure understanding of contents and procedures.
- Review and preview all references and visual aids selected for the lesson by the course administrator.
- Select and prepare appropriate instructional aids in addition to those provided by the course administrator; if desired.
- Provide the student with a clear understanding of the rationale and procedures involved in the control of bleeding and shock.
- Provide the student with ample practical experience in methods of bleeding control and shock prevention.
- Provide the student with ample practical experience in techniques of performing primary and secondary surveys as a programmed patient.
- Brief all instructor aides as to their roles and responsibilities during the lesson.

Time (Elapsed) Actual — **Contents**

Administrative Matters
(--) 0:05

1. Student attendance.
2. Announcements, etc.

Introduction
(0:05) 0:05

1. **Lesson Coverage**
   - a. The design of the circulatory system.
   - b. Technique of determining blood pressure.
   - c. Signs and meaning of shock and techniques for controlling bleeding.
   - d. Signs of external and internal bleeding and techniques for controlling bleeding.
   - e. Performing an examination for life-threatening problems.
   - f. Additional practice on airway care, pulmonary resuscitation and cardiopulmonary resuscitation, as needed.
2. **Need for Lesson**
   - a. Severe bleeding and shock are life-threatening emergencies. Performing a patient survey for life-threatening problems will be the EMT-A's first responsibility at the accident scene.
   - b. Students will be evaluated on knowledge and skills in the next lesson. The practice session for this lesson will therefore provide an opportunity for all students to practice skills learned thus far in the course in order that they may be prepared for the practice, test and evaluation session.
3. **Lesson Objectives.** At the end of the lesson, each student will be able to:
   - a. List four methods of controlling external bleeding.
   - b. Demonstrate control of external bleeding by use of direct pressure, elevation and pressure points.
   - c. Describe when and how to use a tourniquet.
   - d. List four signs of internal bleeding.
   - e. List six types of shock.
   - f. List six signs and/or symptoms of shock.
   - g. Demonstrate and describe five steps in the treatment and prevention of shock.
   - h. Perform a primary survey.
   - i. Perform a secondary survey.
   - j. Obtain and record a blood pressure by both auscultation and palpation.

Mechanics of Circulation
(0:10) 0:15

1. **System Elements and Functions**
   - a. **Heart.** The heart is a hollow muscular organ.
     - 1) The left part of the heart receives oxygenated blood from the lungs and pumps it to all body parts.
     - 2) The right part of the heart receives blood from all body parts and pumps it to the lungs to be reoxygenated.
   - b. **Arteries.** Arteries carry freshly oxygenated blood to the body. The aorta is the major artery leaving the left side of the heart.
   - c. **Capillaries.** Each artery divides into smaller and smaller branches and finally forms capillaries. Through the very thin capillary walls, oxygen, carbon dioxide and other substances are exchanged between body cells and the circulatory system.
   - d. **Veins.** Veins collect deoxygenated blood from the capillaries and carry it back to the heart.
2. **Pulse.** Each time the heart pumps, a pulse can be felt throughout the arterial system. The pulse can be felt in any area where an artery passes over a bony prominence or lies close to the skin. It can most easily be felt where a large artery is close to the skin surface, that is:
   - a. The radial pulse.

Instructor's Notes

If new instructor, introduce self and instructor aides.

Review lesson coverage and objectives. Emphasize criticality of skills and knowledge covered.

Emphasize importance of the practice session.

Refer to lesson objectives in the Student Study Guide and review with class.

Refer to illustration of design of heart circulatory system.

Demonstrate location of pulses and have each class member find his own pulses and those of a neighbor.

b. The carotid pulse.

c. The femoral pulse.

d. The brachial pulse (infants).

3. **Blood**

a. **Composition.** Blood is a red, sticky fluid that travels through the circulatory system. The average adult has six liters of blood.

b. **Functions**

1) Blood carries oxygen to body tissues and removes waste products.

2) It carries cells that combat infection in the body.

3) It has the capability of clotting; clotting normally takes 6 to 7 minutes.

c. **Perfusion**

1) The term perfusion means the circulation of blood within an organ. An organ is perfused if blood is entering it through the arteries and leaving through the veins.

2) Perfusion keeps the body cells healthy by providing them with oxygen and other nutrients and removing waste products.

4. **Blood Pressure**

a. **Definition**

1) Blood pressure is the pressure that the blood exerts against the walls of the arteries as it passes through them. This pressure causes the flow of blood.

2) The pressure wave has high and low points, call systolic pressure and diastolic pressure.

3) They can be measured by a sphygmomanometer and are expressed numerically in millimeters of mercury.

4) In normal males, systolic pressure varies from 100 mm Hg plus the age of the patient up to 140 mm Hg; diastolic pressure, from 65 to 90 mm Hg. In females, the pressure may be 8 to 10 mm Hg lower.

5) Abnormally high blood pressure may result in rupture of the arteries. Abnormally low blood pressure means that there is insufficient pressure in the system to supply blood to all organs of the body and some of these organs may die.

6) It is important for a physician to know the patient's blood pressure as soon as possible after an emergency event in order for him to evaluate the significance of any change in blood pressure measured at the hospital.

b. **Measurement.** Blood pressure is measured with a sphygmomanometer. Procedures are:

1) Fasten cuff of sphygmomanometer about either arm above the elbow and inflate with the rubber bulb until the mercury column or the needle of the dial stops moving with the pulse (usually between 150 and 200 mm Hg).

2) Ausculatory method.

a) Place the stethoscope diaphragm or bell over the brachial artery; earpieces should point forward.

b) Release air slowly from the bulb and observe the mercury column fall or aneroid dial return to zero.

c) Record as the systolic pressure the point on the gauge at which the sound of the pulse is first heard.

d) Record as the diastolic pressure the level on the gauge at which the sounds disappear.

3) Palpation method.

a) Release air slowly from the bulb and observe the mercury.

b) Record the systolic pressure when the pulse is first felt in brachial or radial artery.

Explain how perfusion keeps body cells healthy.

Draw pressure wave on chalkboard.

Display equipment and demonstrate technique on a student. Explain that cuff should be snug.

Have each student locate his own brachial artery and that of his neighbor.

Demonstrate obtaining systolic reading by palpation.

Time (Elapsed) Actual | **Contents**

Shock
(0:25) 0:35

1. **Meaning.** Shock is the failure of the circulatory system to provide sufficient oxygenated red cells to perfuse cellular tissue.
2. **Causes.** Shock is caused by:
   a. Failure of the heart to pump sufficient blood.
   b. Severe blood or fluid loss so that there is insufficient blood for the heart to pump through the system.
   c. Enlargement of blood vessels so that there is insufficient blood to fill them.
   d. Breathing problems resulting in insufficient oxygen traveling through the system.
3. **Result.** Result is the same in all cases—there is inadequate perfusion of the cells—oxygenated blood.
4. **Types**
   a. **Hypovolemic Shock (Blood Loss)—**There is insufficient blood in the system to provide adequate circulation to all body organs. Causes hemorrhage and dehydration.
   b. **Respiratory Shock (Inadequate Breathing)**—There is an insufficient amount of oxygen in the blood.
   c. **Neurogenic Shock (Loss of Vascular Control by the Nervous System)—** Enlargement of the vascular container so that there is insufficient blood to fill it.
   d. **Psychogenic Shock (Fainting)—**Temporary dilation of the blood vessels results in decreased blood supply to the brain.
   e. **Cardiogenic Shock (Inadequate Functioning of the Heart)—**The heart muscle no longer imparts sufficient pressure to the blood to drive it through the system.
   f. **Septic Shock (Severe Infection)—**Bacteria attack small blood vessel walls so that they dilate.
   g. **Anaphylactic Shock (Allergic Reaction)—**This is a severe allergic reaction caused by foods, drugs, insect stings, and inhaled substances. It can occur in minutes or even seconds following contact with the substance to which the patient is allergic.
   h. **Metabolic Shock (Bodily Loss of Fluid)—**A severe fluid loss occurs from a severe untreated illness.
5. **Signs and Symptoms**
   a. Restlessness and anxiety (these signs may precede all others).
   b. Weak and rapid (thready) pulse.
   c. Cold and clammy skin.
   d. Diaphoresis.
   e. Pale or mottled face.
   f. Breathing shallow, labored, rapid, possible irregular or gasping.
   g. Eyes dull or lusterless with dilated pupils.
   h. Marked thirst.
   i. Possible nausea or vomiting.
   j. Gradual and steady drop in blood pressure.
   k. Possible fainting in cases of rapidly developing transient shock.
   l. Decreased capillary refill.
6. **Signs and Symptoms-Anaphylactic Shock**
   a. The skin may burn, flush, itch or break out. The face and tongue may swell. Cyanosis may be visible around the lips.
   b. Breathing is difficult. There is a tightness or pain in the chest and persistent coughing.
   c. Blood pressure drops and the pulse becomes weak or imperceptible.

Instructor's Notes

Describe susceptibility of different organs to lack of perfusion.

A pertinent example is the use of the terms container, pump and fluid, e.g., closed pump system.

List types on chalkboard as they are mentioned. Give examples of causes of each type.

Refer to illustration of face of patient in shock.

90

d. Faintness and coma may ensue.

7. **Emergency Care.** Certain principles of initial treatment may be applied to all patients in shock.
   - a. Secure a clear airway and administer a high percent of oxygen.
   - b. Control bleeding.
   - c. Elevate lower extremities if injuries to them do not make this inadvisable.
   - d. Splint fractures.
   - e. Avoid rough handling.
   - f. Prevent LOSS of body heat.
   - g. Keep the patient supine unless he is personally more comfortable in another position.
   - h. Record blood pressure, pulse and other vital signs at 5-minute intervals.
   - i. Do not feed the patient or give him anything to drink.

NOTE: The basic care for shock is to care for the whole patient to PREVENT shock.

NOTE: The only definitive treatment for anaphylatic shock is an injection to combat the agent causing the reaction. The patient may need to be stabilized with high percent oxygen. The patient needs prompt transportation to a medical facility. The EMT may ASSIST an individual in administering medication (epinephrine) if allowed by State and local protocol.

External Bleeding
(1:00) 0:15

1. **Seriousness**
   - a. The loss of 1 liter of blood in an adult is serious and of 500 ml (1/2 liter) of blood in a child is serious, as is 20% of blood volume in an infant.
   - b. The body has a natural mechanism of defense against bleeding, that is, clotting. If damage is severe, however, clots physically cannot occlude the damaged blood vessels.
   - c. If uncontrolled, bleeding can result in shock and death.
2. **Types**
   - a. **Arterial.** Bleeding from an artery spurts and is bright red in color because it is rich in oxygen.
   - b. **Venous.** Bleeding from a vein is steady and is dark bluish-red in color.
   - c. **Capillary.** Blood oozes from a capillary and is similar in color to venous blood.
3. **Control of Bleeding**
   - **a. Direct Pressure**
     - 1) Direct pressure with the hand over the wound using a universal dressing or gauze pad will stop most bleeding.
     - 2) The dressing should be held in place with a bandage.
     - 3) If the bleeding does not stop, additional pressure should be applied with the hand.
     - 4) Elevation may help control bleeding of an extremity.
     - 5) Large wounds require packaging with gauze.
   - b. **Pressure Points.** If pressure dressings are not available, pressure points may be used to control severe bleeding in the arm or leg.
     - 1) The brachial artery is pressed against the bone to stop bleeding below the pressure point.
     - 2) The femoral artery is pressed against the pelvis to stop bleeding in the leg.
   - c. **Tourniquet**
     - 1) **Use.** A tourniquet is used in a severe emergency when other means will not stop bleeding in an extremity.

Instructor's Notes

Relate the type of care to the type of shock.

Check procedures and protocols on this issue.

Describe uses, advantages and disadvantages of each type. Demonstrate on a student.

Explain that pressure points should be used only if direct pressure fails. Have each student demonstrate on another student.

2) **Dangers.** Tourniquets can damage nerves and blood vessels and result in the loss of an arm or leg.

3) **Procedures.** If a tourniquet must be used:

a) Use a bandage 3 to 4 inches wide and 6 to 8 layers deep.

b) Wrap it around the extremity twice and tie a half knot.

c) Place a stick on top of the knot and complete tying a square knot.

d) Twist the stick until the bleeding stops, and tie it in position.

e) Mark TK on the patient's forehead and be sure to notify other emergency personnel who take charge of the patient that a tourniquet has been applied.

d. **Splints**

1) When a fracture is present, much damage is caused to tissues by broken bones.

2) Splinting may allow prompt control of bleeding associated with the injury.

e. **Pressure Pants and Splints**

1) Pressure splints and pants can aid markedly in controlling severe hemorrhage when massive lacerations of muscle and tissue and multiple fractures have occurred.

2) Pressure pants can also aid in shock control.

4. **Nosebleeds** (epistaxis)

a. **Seriousness.** Nosebleeds can be serious enough to cause shock from blood loss.

b. **Causes**

1) Fractured skull.

2) Facial injuries.

3) Sinusitis, infections, abnormalities of the inside of the nose.

4) High blood pressure.

5) Bleeding diseases.

6) Digital trauma to the nasal airway.

c. **Emergency Care.** Procedures are:

1) Pinch the nostrils or place a bandage between the upper lip and the gum, and press.

2) Keep patient in sitting position.

3) Keep patient quiet.

4) If available, apply ice over the nose.

5) **Caution.** Bleeding from the nose or ears may mean there is a skull fracture. This type of bleeding should not be stopped.

Internal Bleeding
(1:15) 0:10

1. **Seriousness**

a. Internal bleeding can result in severe blood loss and the patient may die of shock.

b. As an example, a fractured shaft of the femur can result in an internal loss of 1 liter of blood.

c. Laceration of the liver can result in severe blood loss and be quickly fatal.

2. **Signs**

a. The signs of internal bleeding are those of hypovolemic shock.

b. In addition, the patient may cough up or vomit bright red blood, vomit dark blood (the color of coffee grounds), pass dark stools, pass bright red blood, or have a tender, rigid abdomen that enlarges.

3. **Emergency Care**

a. The patient suffering from severe internal bleeding is in serious condition and the rescuer can do very little for him at the accident scene.

Explain damages that can result from use of improper use of tourniquets. Demonstrate on a student.

BP cuff may be useful in the unlikely event that a tourniquet is required.

Explain reasons for the techniques of care.

Give reason.

Ask class to identify signs of shock.

Identify injuries associated with each sign.

b. If bleeding is suspected in an extremity, it may be controlled by a pressure dressing or by application of a splint.
c. Fast but safe transportation to a hospital is a must.
d. A high percentage of oxygen should be administered.
e. Military Anti-Shock Trousers (MAST) or Pneumatic Counter Pressure Devices may be useful.

Review of Primary Patient Survey
(1:25) 0:15

1. **Stages.** At the emergency care scene, patient examination must be performed. It is performed in two stages:
   a. Checking for and controlling life-threatening problems—the primary survey.
   b. Checking for and stabilizing injuries not threatening to life—the secondary survey.

2. **Primary Patient Survey.** The procedures for the life-threatening survey are accomplished simultaneously, not sequentially. The EMT-A will feel, talk and observe.

NOTE: The EMT-A should always check for medical identification symbols.

   a. **Level of Consciousness**
      1) Establish responsiveness.
      2) Determine orientation.
   b. **Respirations**
      1) Observe chest and feel for exhaled air at mouth and nose.
      2) Assess rate, quantity, quality.
      3) Don't forget the special case of the laryngectomee.
   c. **Pulse**
      1) Establish existence.
      2) Assess rate and quality.
   d. **Bleeding/Shock**
      1) Observe for life-threatening external bleeding.
      2) Observe for indications of internal bleeding.

NOTE: If there are multiple casualties, check each patient, stopping only to administer to those with life-threatening problems.

Practice (Groups of No More Than 6 Students Per Manikin or Item of Equipment)
(1:40) 1:05

1. Each student should practice taking blood pressure of other students using the following steps:
   a. Fastening and inflating the cuff.
   b. Placing the diaphragm or bell over the brachial artery.
   c. Releasing air and recording systolic and diastolic pressures.

NOTE: The student should also measure systolic pressure by palpation.

2. Each student should practice applying a tourniquet on a fellow student.

3. Each student should perform an examination of a fellow student for life-threatening problems. He should describe what he is doing, implications of his finding and actions to be taken. The instructor should provide any needed information. The student's performance should include:
   a. Checking for state of consciousness.
   b. Checking respirations.
   c. Checking pulse.
   d. Checking for life-threatening bleeding and shock.

4. Each student should practice AS NEEDED the following skills (taught in Lessons 2, 3, and 4):
   a. Opening the airway of patients with and without spine injuries.
   b. Dislodging foreign objects from the airway by blows and by manual thrusts.

Demonstrate procedures on a student. Explain what you are doing, implications of what you find and actions you would take. Stress importance of asking witnesses for information.

Discuss implications.

Discuss implications.

Divide class into groups of 6. Provide a 10-minute break during the practice session.

Monitor and critique each student. Permit students to practice until they can perform the skill without error. Do not prevent circulation in the extremity.

Programmed patient situations are recommended here.

Permit students to practice skills THEY FEEL THEY NEED to practice.

Monitor and critique on an as-needed basis.

DOCUMENT RESUME

ED 264 433 CE 043 158

TITLE	Emergency Medical Technician-Ambulance: National Standard Curriculum. Instructor's Lesson Plans (Third Edition).
INSTITUTION	National Highway Traffic Safety Administration (DOT), Washington, D. C.
REPORT NO	DOT-HS-900-073
PUB DATE	84
NOTE	343p.; For related documents, see CE 043 157-159.
AVAILABLE FROM	Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402.
PUB TYPE	Guides - Classroom Use - Guides (For Teachers) (052)
EDRS PRICE	MF01/PC14 Plus Postage.
DESCRIPTORS	*Allied Health Occupations Education; Behavioral Objectives; Classroom Techniques; Course Content; Course Descriptions; *Emergency Medical Technicians; *First Aid; *Injuries; Lesson Plans; Medical Assistants; *Medical Services; Postsecondary Education; Rescue; Teaching Methods; Units of Study

ABSTRACT

This set of instructor's lesson plans is one of three documents prepared for the Emergency Medical Technician (EMT) National Standard Curriculum. It contains detailed outlines of course content and guidance for teaching each course lesson. The training course contains 33 lessons covering all emergency medical techniques currently considered to be within the responsibilities of the EMT providing emergency care with an ambulance service. Each lesson consists of the following parts: (1) title page and objectives, total lesson time, and student performance objectives for the lesson; (2) requirements for equipment, materials, illustrations, instructors, and facilities; (3) instructor tasks needed to prepare for teaching the lesson; and (4) a detailed lesson outline and suggested instructional strategy. For the evaluation lessons, aids for developing evaluation checklists are included. A synopsis of the 33 lessons appears in the introduction to the lesson plans. Appendixes to the lesson plans include the American Heart Association cardiopulmonary resuscitation guidelines, a bibliography, and in-hospital clinical guidelines. (KC)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

BEST COPY AVAILABLE

U.S. Department
of Transportation
**National Highway
Traffic Safety
Administration**

Emergency Medical Technician-Ambulance: National Standard Curriculum

Instructor's Lesson Plans
(Third Edition)

1984

ED264433

CE043158

U.S. DEPARTMENT OF EDUCATION
NATIONAL INSTITUTE OF EDUCATION
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

☑ This document has been reproduced as received from the person or organization originating it.

Minor changes have been made to improve reproduction quality.

- Points of view or opinions stated in this document do not necessarily represent official NIE position or policy.

Table of Contents

Foreword iii
Introduction v
Lesson 1. Introduction to Emergency Care Training 1
Lesson 2. Anatomy and Physiology and Patient Assessment 15
Lesson 3. Airway Obstruction and Respiratory Arrest 31
Lesson 4. Cardiac Arrest 49
Lesson 5. Manikin Practice and Certification 61
Lesson 6. Practical use of Airway Adjuncts 65
Lesson 7. Bleeding and Shock 81
Lesson 8. Test and Evaluation-Airway Care, Pulmonary Arrest, Cardiac Arrest, Bleeding and Shock 97
Lesson 9. Review of Shock and Introduction to the Practical use of Pneumatic Counter Pressure Devices (MAST) 105
Lesson 10. Soft Tissue Injuries 115
Lesson 11. Principles of Musculoskeletal Care and Fractures of the Upper Extremity 125
Lesson 12. Fractures of the Pelvis, Hip and Lower Extremities 141
Lesson 13. Practical Lab: Fracture care of the Upper and Lower Extremities 149
Lesson 14. Injuries of the Head, Face, Eye, Neck and Spine 153
Lesson 15. Practical Lab: Patient Assessment 169
Lesson 16. Injuries to the Chest, Abdomen and Genitalia 173
Lesson 17. Practical Lab: Injuries 185
Lesson 18. Test and Evaluation: Injuries 193
Lesson 19. Medical Emergencies I 197
Lesson 20. Medical Emergencies II 215
Lesson 21. Emergency Childbirth 235
Lesson 22. Burns and Hazardous Materials 247
Lesson 23. Environmental Emergencies 257
Lesson 24. Psychological Aspects of Emergency Care 267
Lesson 25. Lifting and Moving Patients 285
Lesson 26. Principles of Extrication 297
Lesson 27. Practical Lab: Extrication 307
Lesson 28. Test and Evaluation—Medical Emergencies, Emergency Childbirth, Environmental Emergencies, Lifting and Moving 311
Lesson 29. Ambulance Operations I 317
Lesson 30. Ambulance Operations II 329
Lesson 31. Situational Review 335
Lesson 32. Final Written Test 345
Lesson 33. Final Practical Evaluation of Skills 349
Appendices: Appendix A: American Heart Association CPR Guidelines 355
Appendix B: Bibliography 371
Appendix C: In-hospital Clinical Guidelines 373

For sale by the Superintendent of Documents, U.S. Government Printing Office Washington, D.C. 20402

Foreword

The National Highway Traffic Safety Administration has assumed responsibility for the development of training courses that are responsive to the standards established by the Highway Safety Act of 1966 (amended). Since these training courses are designed to provide national guidelines for training, it is NHTSA's intention that they be of the highest quality and be maintained in a current and up-to-date status from the point of view of both technical content and instructional strategy. To this end, NHTSA supported the current study which involved revision of selected curriculum packages deemed of high value to the States in carrying out their annual work programs. This course is one of a series of courses making up a National EMS training program for pre-hospital care. This program is a major component of the total EMS system development.

The original package of the current training program was prepared in 1969 and was titled "Basic Training Program for Emergency Medical Technician-Ambulance." This training course was revised in 1977 and generally reflected the coverage and design of the original training. A Student Study Guide was developed which was not included as part of the original package. During the revision of the third edition, all three documents have been updated. The current Instructor's Lesson Plans have been updated and expanded to reflect a greater emphasis on the practical application aspects of being an EMT as well as to represent the current state of the art in pre-hospital emergency care at a basic life support level. The Course Guide has been updated to reflect the revised program and to be more responsive to the needs of the course coordinator. The Student Study Guide has been revised to parallel the changes in Instructor's Lesson Plans. The material which was previously contained in the DOT Patient Handling Manual has likewise been incorporated into the Student Study Guide and Instructor's Lesson Plans along with instruction on the Military Anti-Shock Trousers (MAST).

Since the inception of this training course, the Department of Transportation has worked closely with many consultants to assure the quality of the medical content of this curriculum. Most notably, the American Academy of Orthopaedic Surgeons has contributed substantially to the quality of this endeavor. As early as 1964, the Academy established and conducted training courses for ambulance personnel. From these courses the original National Standard Curriculum was developed along with the Academy's reference textbook, **Emergency Care and Transportation of the Sick and Injured.**

The third edition of this text, published by the Academy in 1981, has served as the primary reference text for the medical content of this curriculum to provide a great deal of materials and to update and refine many of the older concepts.

NHTSA wishes to thank the entire membership of the National Council of State Emergency Medical Services Training Coordinators in the development and review of these materials. Specifically acknowledgement is provided to the following project staff for the National Council of State EMS Training Coordinators who coordinated this revision effort:

A.C. "Buck" Buchanan, Massachusetts

Patrick Cote, Maine

S. Gail Dubs, Pennsylvania

Michael F. French, Wisconsin

Tyler B. Larson, North Dakota

Nels D. Sanddal, Project Director

NHTSA also recognizes the following individuals who represented their organizations in an official liaison capacity during this project.

James D. Heckman, M.D., representing the American Academy of Orthopaedic Surgeons

Zella Jacobsen, R.N., Certified Psychiatric Nurse, Montana Deaconess Medical Center, Great Falls, Montana for her assistance in the development of Lesson 24.

John C. Johnson, M.D., representing the American College of Emergency Physicians

Norman E. McSwain, M.D., representing the American College of Surgeons

Robert Porter and David Wuertz, representing the National Association of Emergency Medical Technicians

5

Introduction

This instructor's lesson plans document is one of three documents prepared for the Emergency Medical Technician—Ambulance, National Standard Curriculum. It was prepared for the course instructors. As such, it contains detailed outlines of course content and guidance for teaching each course lesson. Two other documents complete the training package: a Course Guide which contains planning and management information required by the course coordinator to administer the training program and a Student Study Guide which provides an overview of the objectives and content of each course lesson and includes study suggestions to aid trainees in achieving course objectives.

The training course covers all emergency medical techniques currently considered to be within the responsibilities of the EMT-A providing emergency care with an ambulance service. The course consists of 33 lessons involving 100 hours of classroom and field training plus 10 hours of in-hospital observation and training. The titles and times required for each of the 33 course lessons are given on the following page. The specified training times are minimal; actual training time (including clinical experiences) is expected to range from the recommended minimum of 110 hours to 140 hours or more depending on individual State program requirements. The purpose of the training is to **Ensure Individual Competency In Each Student** by the successful completion of each objective.

In order to be maximally useful to most States, it was determined that the basic structure and format of the course should remain essentially unchanged in this revision effort. The major program changes include: a complete technical update, an early and continuing emphasis on patient assessment, and reinforcement throughout the course of the basic sequence of emergency care procedures. Thus the instructor will note that the primary patient survey for life-threatening problems and the secondary survey for injuries not threatening to life have been introduced in Lesson 2. Both surveys are repeated throughout the training program as are basic emergency care procedures. Additional time has been added to allow for improved practical skill development at several points throughout the course. Several new lessons have been added, e.g., the Psychological Aspects of providing Emergency Care; and several other lessons have been substantially reorganized.

This instructor's lesson plans document includes a section for each course lesson. In general, lessons have been designed to be self-contained units. Each lesson consists of the following parts:

Title Page and Objectives. Specified here are the title of the lesson, total lesson time, and student performance objectives for the lesson.

Requirements. Specified here are lesson requirements for equipment, materials, illustrations, instructors, and facilities as required.

Instructor Tasks. Specified here are tasks the instructor should perform to prepare himself for teaching the lesson.

Lesson Outline. This section includes a detailed outline of the content of the lesson and the suggested instructional strategy. In addition, time estimates are provided for various lesson segments to provide a means by which the instructor can determine the emphasis to be given to a specific topic as well as to aid him in completing his lesson on schedule.

For the evaluation lessons, prepared written tests are required to evaluate student knowledge and checklists are required to provide for a standardized evaluation of student skills. Aids for developing the checklists are included in the evaluation lessons. It is assumed that all written tests and skill checklists will be developed by course instructors in cooperation with the Course Coordinator.

Course Lessons

1. **Introduction To Emergency Care Training** (3 hrs.) Overview of course objectives, scope, EMT-A roles and responsibilities, legal aspects of emergency care.

2. **Anatomy, Physiology and Patient Assessment** (3 hrs.) Overview of human systems, including anatomy, physiology and an introduction and practice in patient assessment.

3. **Airway Obstruction and Respiratory Arrest** (3 hrs.) Basic mechanics of respiration; signs of airway obstruction and respiratory arrest; maintaining an open airway; pulmonary resuscitation; variations for infants, children and laryngectomees.

4. **Cardiac Arrest** (3 hrs.) Basic mechanics of circulation; signs of cardiac arrest; cardiopulmonary resuscitation by a lone rescuer and by a team of rescuers; variations for infants and children.

5. **Manikin Practice and Certification** (4 hrs.) This lesson when combined with lessons 3 and 4 should provide the student with sufficient practice to be certified in CPR to American Heart Association Standards.

6. **Practical Use of Airway Adjuncts** (3 hrs.) Use of airways, suction equipment, oxygen equipment and delivery systems, resuscitation devices. Special considerations in CPR.

7. **Bleeding and Shock** (3 hrs.) Basic mechanics of circulation; determining blood pressure; signs of shock; preventing shock; treating shock; signs of external and internal bleeding; controlling bleeding; performing an examination for life-threatening problems; taking blood pressure; additional practice on airway care; pulmonary and cardiopulmonary resuscitation; use of mechanical aids to airway care and resuscitation.

8. **Test and Evaluation—Airway Care, Pulmonary Arrest, Cardiac Arrest, Bleeding and Shock** (3 hrs.) Test of knowledge taught thus far; practice on an evaluation of skills taught thus far.

9. **Review of Shock and Introduction To Practical Use of Pneumatic Counter Pressure Devices** (MAST) (4 hrs.) This lesson provides a review of shock, indications and contraindications in the use of pneumatic counter pressure devices (PCPD) and provides practice in their application.

10. **Soft Tissue Injuries** (3 hrs.) Anatomy and physiology of the skin, signs and significance of various wound types, basic care of wounds, dressing and bandaging wounds.

11. **Principles of Musculoskeletal Care and Fractures of the Upper Extremity** (3 hrs.) Anatomy and physiology of the musculoskeletal system; definitions and types of fractures and dislocations; signs and symptoms of fractures, dislocations and sprains; examining a patient for injuries; techniques of immobilizing fractures and dislocations of the upper extremity.

12. **Fractures of the Pelvis, Hip and Lower Extremity** (3 hrs.) Signs and symptoms of fractures and dislocations of the pelvis, hip and lower extremity; immobilizing fractures and dislocations of the pelvis, hip and lower extremity; practice in examining a patient for injuries and in the use of pneumatic counter pressure devices.

13. **Practical Lab: Fracture Care of the Upper and Lower Extremities** (3 hrs.) Practice in the assessment and management of fractures of the upper and lower extremities.

14. **Injuries of the Head, Face, Eye, Neck and Spine** (3 hrs.) Anatomy and physiology of the nervous system; signs and symptoms of spine fractures; general rules of caring for patients with spine injuries; signs of a skull fracture; caring for patients suffering from injuries to the skull, brain, face, eye and neck; practice in immobilizing patients on short and long backboards.

15. **Practical Lab: Patient Assessment and Spine Immobilization** (3 hrs.) Practice of patient assessment techniques and in the recognition and treatment of spine injuries.

16. **Injuries to the Chest, Abdomen and Genitalia.** (3 hrs.) Parts and functions of the abdomen, digestive system and genitourinary system; chest, abdomen, and genitalia; techniques of care; dressing and bandaging the chest; practice in performing a complete patient examination for life-threatening problems and injuries.

17. **Practical Lab: Injuries I** (3 hrs.) Practice in the recognition and treatment of injuries to various body parts including: performing a patient examination, use of pneumatic counter pressure devices, dressing and bandaging, spine immobilization and fracture immobilization.

18. **Test and Evaluation: Injuries II** (3 hrs.) Written and practical examination covering "the recognition and treatment of injuries to various body parts including: performing a patient examination, use of pneumatic counter pressure devices, dressing and bandaging, spine immobilization and fracture immobilization."

19. **Medical Emergencies I** (3 hrs.) Causes, signs, symptoms and techniques of care for poison victims; victims of bites and stings; heart attack patients; stroke patients; patients suffering from dyspnea. Practice in CPR and mechanical aids to resuscitation.

20. **Medical Emergencies II** (3 hrs.) Causes, signs, symptoms and techniques of care for diabetic patients, patients suffering from acute abdominal problems, patients with communicable diseases, poisoning patients, patients having seizures, pediatric patients, practice in patient assessment.

21. **Emergency Childbirth** (3 hrs.) Relevant anatomy, physiology, terms and emergency care equipment; delivery and care of the baby and mother during normal and abnormal births; resuscitating the newborn; care of the premature infant, practice in simulated deliveries.

22. **Burns and Hazardous Materials** (3 hrs.) Estimating the degree and size of a burn, caring for the burned patient; special dangers of different types of burns (heat, chemical, electrical, radiation), identification and recognition of hazardous materials situation and proper precautionary procedures.

23. **Environmental Emergencies** (3 hrs.) Signs, symptoms and techniques of care for the patient suffering from heat cramps, heat exhaustion, heat stroke, hypothermia and frostbite; signs, symptoms and techniques of care for the patient exposed to water related emergencies.

24. **Psychological Aspects of Emergency Care** (3 hrs.) Considerations when dealing with special patients: infants, children, elderly, handicapped, psychologically disturbed; patients displaying abnormal behavior, substance abuse patients, dealing with death and dying and emotional aspects of providing care as an EMT-A.

25. **Lifting and Moving Patients** (3 hrs.) Techniques of lifting and moving patients; immobilizing patients with suspected spine injuries on short and long backboards; loading and unloading stretchers; review of triage.

26. **Principles of Extrication** (3 hrs.) Principles and considerations involved in gaining access to and extricating persons from inaccessible situations, packaging and removing patients with suspected spine and other injuries; removing patients from beneath vehicles.

27. **Practical Lab: Extrication** (3–8 hrs.) Practice in patient assessment, treatment and removal of patients from motor vehicles and other inaccessible situations.

28. **Test and Evaluation—Medical Emergencies, Emergency Childbirth, Environmental Emergencies, Lifting and Moving** (3 hrs.) Test of knowledge and skills of medical emergencies, emergency childbirth, environmental emergencies, psychological aspects, and lifting and moving patients; extrication.

29. **Ambulance Operations I** (3 hrs.) Overview of regulations and recommendations pertaining to driving an emergency vehicle, provide an understanding of all records and reporting systems and forms utilized by the EMT and promote efficient and proper use of all radio communications equipment and systems the EMT-A will utilize.

30. **Ambulance Operations II** (3 hrs.) Provide an overview of such aspects of EMT responsibilities as: vehicle and equipment maintenance, emergency department procedures, scene control, special scene situations (crime, death, etc.), disaster planning and other non-medical functions during a typical ambulance run.

31. **Situational Review** (3 hrs.) Review of course contents by group discussion of situational examples.

32. **Final Written Test** (2 hrs.) Test of knowledge learned.

33. **Final Practical Evaluation of Skills** (3 hrs.) Evaluation of skills learned in the emergency care course.

9

Lesson 1
Introduction to Emergency Care Training

Objectives

At the conclusion of Lesson 1, the instructor will have provided sufficient information, demonstration, and practice to the student to ensure his/her ability to:

- Describe in their own words the goal of the EMT-A, National Standard Curriculum.
- List four contributing agencies in your local EMT-A system.
- Describe the mechanism for accessing your local EMS system.
- List six roles and responsibilities of the EMT-A.
- List six areas of personal attitude and conduct expected of an EMT-A.
- List three medico-legal aspects of emergency medical care.
- Describe State requirements for EMT-A certification and recertification.

Requirements

Material: (One for each student)

- Registration form
- Textbook
- Workbook
- Student Study Guide
- Handouts
- Certification and recertification requirements
- Medico-legal requirements
- Local and State rules and regulations
- Others as required

Equipment:

- 16 mm projector
- 35 mm projector
- Movie screen
- Chalkboard

Visual Aids: (suggested)

- 16mm film "Life or Death" or similar
- 35 mm slides—AAOS or similar

Instructors:

- State EMS Office representative or assignee knowledgeable in all areas of subject matter.

Instructor Preparations/Tasks

The Instructor Should:

- Review the lesson outline to assure understanding of contents and procedures.
- Review and preview all references and visual aids selected for the lesson by the course administrator.
- Select and prepare appropriate instructional aids in addition to those provided by the course administrator; if desired.
- Be familiar with all visual aids and other equipment to be demonstrated during the lesson.
- Be able to familiarize the student as to the content and purpose of all course literature to be presented during this lesson.
- Be knowledgeable of all State and local laws, ordinances, rules and regulations relative to providing good emergency care.
- Be aware that much of the lesson is introductory in nature and will be repeated and reinforced in subsequent lessons.

Time (Elapsed) Actual	Contents
Introduction (--) 0:05	1. Instructor introduction a. Name b. Title c. Affiliation, etc. 2. Student welcome—acknowledgement that attendees are assembled for the first lesson of an 81-hour course in emergency medical care, designed to prepare students to become emergency medical technicians, or EMT's. 3. Registration form completion.
Need for Training (0:05) 0:05	1. The EMT's primary responsibilities are to bring expert emergency medical care to victims of emergencies, stabilize their conditions, and transport them safely and expeditiously to the hospital. 2. The EMT-A must perform his duties unsupervised, in a great variety of circumstances, and often under considerable physical and emotional stress. 3. The EMT-A typically represents the first component of the emergency medical care system. With proper training, he will be able to provide basic life support to victims of emergencies as well as minimize discomfort and further injury. 4. The actions of the EMT-A can mean the difference between life and death of the victim. Proper handling and care of the patient at the scene can minimize patient suffering and reduce recuperation time. 5. This course will provide Basic training in all aspects of emergency medical care which an EMT-A is permitted to provide today. Advanced, continuing education and refresher training courses are also available as part of a career development pattern. 6. This course is the national standard for training emergency medical technicians. 7. The responsibilities associated with the EMT-A profession are major. It is therefore important that the student take his training responsibilities seriously by attaining 100% proficiency in all areas through punctuality, attendance, completion of assignments, class participation and full cooperation with the instructor.
Course Purpose and Emphasis (0:10) 0:05	1. The course has been designed so that, upon successful completion, the student will be able to: a. Recognize the nature and seriousness of a patient's illness/injuries to assess requirements for emergency medical care. b. Administer appropriate emergency medical care to stabilize the patient's condition. c. Lift, move, position and otherwise handle the patient in such a way as to minimize discomfort and further injury. 2. It is obvious that the EMT provides a service in a special environment requiring special skills and knowledge in such areas as communication, transportation, record-keeping and liaison with other emergency services. The course includes all operational functions considered to be within the roles and responsibilities of the EMT-A but does not attempt to develop proficiency in these areas. 3. The course emphasizes emergency medical care skills. However, it attempts to teach these skills in a job-related context.
Course Scope and Materials (0:15) 0:15	1. **Course Lessons.** **Lesson 1. Introduction To Emergency Care Training** (3 hrs.) Overview of course objectives, scope, EMT-A roles and responsiblities, legal aspects of emergency care. **Lesson 2. Anatomy and Physiology and Patient Assessment** (3 hrs.) Overview of human systems, including anatomy, physiology and an introduction and practice in patient assessment.

Instructor's Notes

Describe responsibility relative to the course.

If the class is small and time permits, ask each student to introduce himself. Ask each student to complete registration form.

Refer to schedule of lessons. Indicate what instructor and student will accomplish in each lesson. Give time and place of each lesson.

Time (Elapsed) Actual	**Contents**
	Lesson 3. Airway Obstruction and Respiratory Arrest (3 hrs.) Basic mechanics of respiration; signs of airway obstruction and respiratory arrest; maintaining an open airway; pulmonary resuscitation; variations for infants, children and laryngectomees.
	Lesson 4. Cardiac Arrest (3 hrs.) Basic mechanics of circulation; signs of cardiac arrest; cardiopulmonary resuscitation by a lone rescuer and by a team of rescuers; variations for infants and children.
	Lesson 5. Manikin Practice and Certification (4 hrs.) This lesson when combined with lessons 3 and 4 should provide the student with sufficient practice to be certified in CPR to American Heart Association Standards.
	Lesson 6. Practice Use of Airway Adjuncts (3 hrs.) Use of airways, suction equipment, oxygen equipment and delivery systems, resuscitation devices. Special considerations in CPR.
	Lesson 7. Bleeding and Shock (3 hrs.) Basic mechanics of circulation; determining blood pressure; signs of shock; preventing shock; treating shock; signs of external and internal bleeding; controlling bleeding; performing an examination for life-threatening problems; taking blood pressure; additional practice on airway care; pulmonary and cardiopulmonary resuscitation; use of mechanical aids to airway care and resuscitation.
	Lesson 8. Test and Evaluation—Airway Care, Pulmonary Arrest, Cardiac Arrest, Bleeding and Shock (3 hrs.) Test of knowledge taught thus far; practice on an evaluation of skills taught thus far.
	Lesson 9. Review of Shock and Introduction To Practical Use of Pneumatic Counter Pressure Devices (MAST) (4 hrs.) This lesson provides a review of shock indications and contraindications in the use of pneumatic counter pressure devices and provides practice in their application.
	Lesson 10. Soft Tissue Injuries (3 hrs.) Anatomy and physiology of the skin, signs and significance of various wound types, basic care of wounds, dressing and bandaging wounds.
	Lesson 11. Principles of Musculoskeletal Care and Fractures of the Upper Extremity (3 hrs.) Anatomy and physiology of the musculoskeltal system; definitions and types of fractures and dislocations; signs and symptoms of fractures, dislocations and sprains; examining a patient for injuries; techniques of immobilizing fractures and dislocations of the upper extremity.
	Lesson 12. Fractures of the Pelvis, Hip and Lower Extremity (3 hrs.) Signs and symptoms of fractures and dislocations of the pelvis, hip and lower extremity; immobilizing fractures and dislocations of the pelvis, hip and lower extremity; practice in examining a patient for injuries and in the use of pneumatic counter pressure devices.
	Lesson 13. Practical Lab; Fracture Care of the Upper and Lower Extremities (3 hrs.) Practice in the recognition and treatment of fractures of the upper and lower extremities.
	Lesson 14. Injuries of the Head, Face, Eye, Neck and Spine (3 hrs.) Anatomy and physiology of the nervous system; signs and symptoms of spine fractures; general rules of caring for patients with spine injuries; signs of a skull fracture; caring for patients suffering from injuries to the skull, brain, face, eye and neck; practice in immobilizing patients on short and long backboards.
	Lesson 15. Practical Lab: Patient Assessment and Spine Immobilization (3 hrs.) Practice of patient assessment techniques and in the recognition and treatment of spine injuries.
	Lesson 16. Injuries to the Chest, Abdomen and Genitalia (3 hrs.) Parts and functions of the abdomen, digestive system and genitourinary system; chest, abdomen, and genitalia; techniques of care; dressing and bandaging the chest;

Instructor's Notes

(Note: all times are minimum times.) Explain how the course emphasizes patient assessment and proper procedures of emergency care.

practice in performing a complete patient examination for life-threatening problems and injuries.

Lesson 17. Practical Lab: Injuries I (3 hrs.) Practice in the recognition and treatment of injuries to various body parts including: performing a patient examination, use of pneumatic counter pressure devices, dressing and bandaging, spine immobilization and fracture immobilization.

Lesson 18. Test and Evaluation—Injuries II (3 hrs.) Written and practical examination covering "the recognition and treatment of injuries to various body parts including: performing a patient examination, use of pneumatic counter pressure devices, dressing and bandaging, spine immobilization and fracture immobilization."

Lesson 19. Medical Emergencies I (3 hrs.) Causes, signs, symptoms and techniques of care for poison victims; victims of bites and stings; heart attack patients; stroke patients; patients suffering from dyspnea. Practice in CPR and mechanical aids to resuscitation.

Lesson 20. Medical Emergencies II (3 hrs.) Causes, signs, symptoms and techniques of care for diabetic patients, patients suffering from acute abdominal problems, patients with communicable diseases, substance abuse patients, patients having seizures, pediatric patients, practice in patient assessment.

Lesson 21. Emergency Childbirth (3 hrs.) Relevant anatomy, physiology, terms and emergency care equipment; delivery and care of the baby and mother during normal and abnormal births; resuscitating the newborn; care of the premature infant, practice in simulated deliveries.

Lesson 22. Burns and Hazardous Materials (3 hrs.) Estimating the degree and size of a burn, caring for the burned patient; special dangers of different types of burns (heat, chemical, electrical, radiation), identification and recognition of hazardous materials situations and proper precautionary procedures.

Lesson 23. Environmental Emergencies (3 hrs.) Signs, symptoms and techniques of care for the patient suffering from heat cramps, heat exhaustion, heat stroke, hypothermia and frostbite; signs, symptoms and techniques of care for the patient exposed to water related emergencies.

Lesson 24. Psychological Aspects of Emergency Care (3 hrs.) Considerations when dealing with special patients; infants, children, elderly, handicapped, psychologically disturbed; patients displaying abnormal behavior, substance abuse patients, dealing with death and dying and emotional aspects of providing care as an EMT.

Lesson 25. Lifting and Moving Patients (3 hrs.) Techniques of lifting and moving patients; immobilizing patients with suspected spine injuries on short and long backboards; loading and unloading stretchers; review of triage.

Lesson 26. Principles of Extrication (3 hrs.) Principles and considerations involved in gaining access to and extricating persons from inaccessible situations, packaging and removing patients with suspected spine and other injuries; removing patients from beneath vehicles.

Lesson 27. Practical Lab: Extrication (3–8 hrs.) Practice in patient assessment, treatment and removal of patients from motor vehicles and other inaccessible situations.

Lesson 28. Test and Evaluation—Medical Emergencies, Emergency Childbirth, Environmental Emergencies, Lifting and Moving (3 hrs.) Test of knowledge and skills of medical emergencies, emergency childbirth, environmental emergencies, psychological aspects, and lifting and moving patients; extrication.

Lesson 29. Ambulance Operations I (3 hrs.) Overview of regulations and recommendations pertaining to driving an emergency vehicle, provide an understanding of all records and reporting systems and forms utilized by the EMT-A

Instructor's Notes

Time (Elapsed) Actual — **Contents**

and promote efficient and proper use of all radio communications equipment and systems the EMT-A will utilize.

Lesson 30. Ambulance Operations II (3 hrs.) Provide an overview of such aspects of EMT-A responsibilities as: vehicle and equipment maintenance, emergency department procedures, scene control, special situations (crime, death, etc.), disaster planning and other non-medical functions during a typical ambulance run.

Lesson 31. Situational Review (3 hrs.) Review of course contents by group discussion of situational examples.

Lesson 32. Final Written Test (2 hrs.) Test of knowledge learned.

Lesson 33. Final Practical Evaluation of Skills (3 hrs.) Evaluation of skills learned in the emergency care course.

2. **In-Hospital Training.** In addition to the 33 lessons, the course includes 10 hours of in-hospital observation and training.

3. **Materials.** Identification of:
   a. Recommended text(s), references, reading assignments
   b. Design and use of the Student Study Guide

4. **Other Requirements.**
   a. Describe certification procedures
   b. Describe other local and/or State requirements.

Objectives of Lesson 1 (Review)
(0:30) 0:05

1. Describe in their own words the goal of the EMT-A: National Standard Curriculum.
2. List four contributing agencies in your local EMS system.
3. Describe the mechanism for accessing your local EMS system.
4. List six roles and responsibilities of the EMT-A.
5. List six areas of personal attitude and conduct expected of an EMT-A.
6. List three medico-legal aspects of emergency medical care.
7. Describe State requirements for EMT-A certification and recertification.

Role and Responsibilities of the EMT
(0:35) 0:30

1. As indicated previously, the EMT's primary responsibility is to the patient. His patient care role includes:
   a. Careful examination of the patient for signs and symptoms of illness/injuries.
   b. Prompt and efficient care of the patient and stabilization of his condition prior to transport.
   c. Careful handling of the patient in moving him to the ambulance vehicle.
   d. Safe and efficient transport of the patient while constantly monitoring the patient and providing any appropriate continuing care.
   e. Orderly transfer of the patient to the hospital emergency department.

2. In addition to the preceding patient responsibilities, he may need to perform the following functions if other emergency services are not available at the accident scene:
   a. Use basic tools and procedures to gain access to and disentangle the patient from the vehicle.
   b. Control the accident scene, including parking his vehicle in such a way as to minimize further danger in the roadway as well as controlling the actions of bystanders.

3. Other functions considered an integral part of the EMT-A's job are as follows:
   a. Communications—This role includes obtaining information regarding the emergency from the dispatcher, communicating with other emergency services as

Instructor's Notes

Identify requirements for course completion. Describe nature of training planned for the course, where and when it will take place.

Indicate how these roles and responsibilities are covered in the course.

Time (Elapsed) Actual | **Contents**

needed during the ambulance run (preceeding to the scene, at the scene, and proceeding to the hospital), and alerting hospital emergency department staff of the arrival of critical patients. The EMT-A, of course, must follow FCC regulations relative to the use of communications equipment.

b. Reporting and recordkeeping—in addition to records maintained for the ambulance service, the EMT-A will need to obtain and record information required by medical, legal and health authorities as required.

c. Vehicle driving, maintenance and care—The EMT-A will need to drive his vehicle safely and defensively at all times. In addition to routine vehicle maintenance, he will need to check his vehicle after each run for level of gas, adequacy of equipment and supplies, cleanliness, etc. He will also need to make a daily check of his vehicle equipment and systems.

4. The EMT-A will need to learn a good deal about the area in which he provides services and will need to exercise a good deal of judgment in carrying out these services. For example:
   a. Enroute to the scene—The EMT-A will need to use the appropriate route depending on time of day, nature of the event, etc. He will need to plan ahead regarding equipment he might need to take with him when he leaves the vehicle, etc.
   b. At the scene—The EMT-A will need to examine patients, perform triage as necessary and render appropriate care.
   c. Enroute to the hospital—The EMT-A will need to monitor the patient constantly and provide continuing care.
   d. At the hospital—The EMT-A will need to unload the patient carefully, communicate all needed information to the hospital emergency department staff, assist hospital personnel as necessary, etc.
5. Summary of functions:
   a. Patient examination
   b. Prompt and efficient care
   c. Appropriate patient handling
   d. Safe and efficient patient transport
   e. Orderly transfer of patient to emergency department
   f. Communications
   g. Reporting and recordkeeping
   h. Vehicle driving, maintenance and care
   i. If Rescue Crews Are Absent, gain access to and disentangle patient
   j. If Police Are Absent, control the accident scene

Personal Attitudes and Conduct of the EMT
(1:05) 0:15

1. **Professional Manner,** i.e., controls emotion, is courteous, use proper tone of voice, is confident, chooses appropriate types of conversation, does not smoke while administering care, etc.
2. **Appearance,** i.e., well groomed, clean, wears proper uniform and insignia, etc.
3. **General Conduct,** i.e., shows interest in job, reflects concern for patient, is a good team worker, prevents embarrassment to patients, gives patient reassurance, shows responsibility for safety of all involved, uses patient's resourcefulness in helping himself, is cooperative with others involved in providing aid, etc.

Ten-Minute Break
(1:20) 0:10

Instructor's Notes

Give examples.

Give examples.

Give examples.

Give examples.

Give examples.

List on chalkboard.

Emphasize importance of a calm professional manner.

Time (Elapsed) Actual	**Contents**
Legal Problems Relative to Emergency Care (1:30) 1:00	1. **Duty to Act**—responsibilities relative to responding to the need for care. 2. **Standard of Care.** Elements which make up a standard of care include; a. **The Type of Individual and Community Conduct**—the individual is judged in comparison with other hypothetical persons of similar training and experience. b. **Standards Imposed By Force of Law**—these are standards imposed by statutes, ordinances, case law, or administrative orders. c. **Professional or Institutional Standards**—these are published recommendations of organizations and societies involved in emergency work and specific rules of procedure of the service of which the EMT-A is a part. 3. **Consent** a. **Actual Consent.** To be effective, it must be an informed consent. Oral consent is valid. A consent form does not eliminate the need for conversation. b. **Implied Consent.** In an emergency in which there is a significant risk of death, disability or deterioration of condition, the law assumes that the patient would give his consent. c. **Minor's Consent.** The right to consent is usually given to the parent or other person so close to the minor as to be treated as a parent. d. **Consent of the Mentally Ill.** The situation is similar to that for minors. 4. **Immunities** a. **Government Immunities.** Some government employees are immune to prosecution, although this has been seriously challenged. b. **Good Samaritan Laws.** Some States grant immunity to those who volunteer to help an injured person at the scene of an accident. c. **EMT-A and Paramedic Statutes.** Some States have laws specifically enacted to protect EMT's, paramedics and physicians who give them instructions via radio. d. **Exemption From Medical Practices Act.** Nearly every State exempts emergency treatment from the licensure requirements of the medical practices act for the EMT. e. **Effects of Licensure and Certification.** Most States have licensing and certification requirements that obligate the individual to conform to a standard of care.
Overview of Requirements for Training, Certification and Recertification (2:30) 0:20	1. State requirements as appropriate for: a. Training: such as student prerequisites, attendance, ambulance affiliation, recommendations and interim exam performance. b. Certification: such as examinations, fees, applications, and recommendations. c. Recertification such as length of certification, continuing education, affiliation continuation examination and fees. d. Other requirements as indicated.
Summary and Questions (2:50) 0:10	1. Class questions or comments on the topic of lesson. 2. Demonstration by selected class members of achievement of lesson objectives.

Give examples of all legal problems. Emphasize that the EMT-A will need to keep up to date relative to legal requirements in the area in which he provides services. Cover local ordinances relative to child abuse, foul play, death, rape.

Emphasize importance of patient communications.

Handouts pertaining to State requirements and administrative policy pertaining to these topics should be distributed.

Question class members on selected objectives.

Lesson 2
Anatomy, Physiology and Patient Assessment

Objectives

At the conclusion of Lesson 2, the instructors will have provided sufficient information, demonstration, and practice to the student, to ensure his/her ability to:

- Define the following topographic anatomical terms:
  - medial
  - lateral
  - proximal
  - distal
  - superior
  - inferior
  - anterior
  - posterior
  - midline
  - right
  - left
- Describe the general functions of the following major body systems:
  - respiratory
  - circulatory
  - muscular
  - skeletal
  - nervous
  - digestive
  - genitourinary
  - reproductive
- List the four patient vital signs
- List five diagnostic signs in addition to the vital signs.
- Demonstrate on a programmed patient the technique for completing a total patient assessment and identify and record diagnostic signs and their normal states.
- Record and communicate in proper sequence, their patient assessment information.
- State the difference between a sign and symptom.

Requirements

Materials: (One for each student)

- Trip report form
- Vital signs pad

Equipment:

- Skeleton
- Torso with removable organs
- Break away/cross section plastic organ models of:
  - —Heart
  - —Lung
  - —Brain
- Chalkboard
- 35mm projector
- Movie Screen (minimum, one for each 6 students)
- Penlight
- Stethoscope
- Sphygmomanometer
- Thermometer

Illustrations:

- Anatomic charts of:
  - —Skeletal system
  - —Muscular system
  - —Nervous system
  - —Respiratory system
  - —Circulatory system
  - —Digestive system
  - —Genitourinary system
  - —Reproductive system
  - —Topographic terms
- Flip chart on taking of blood pressures
- List of diagnostic signs

Visual Aids: (suggested)

- 35mm slides AAOS or similar
- 16mm film—"Measuring Blood Pressure" or similar

Instructor Preparations/ Tasks

The Instructor Should:

- Review the lesson outline to assure understanding of contents and procedures.
- Review and preview all references and visual aids selected for the lesson by the course administrator.

- Select and prepare approrpiate instructional aids in addition to those provided by the course administrator; if desired.
- Be familiar with all visual aids and other equipment to be demonstrated during the lesson.
- Provide the student with an understanding of human anatomy and medical terminology as they will have to apply it rendering proper patient care.
- Provide the student with a clear understanding of what a patient assessment is and how to complete and record it.
- Brief all instructor aides as to their roles and responsibilities during the lesson.

Instructor's Notes

Time (Elapsed) Actual | **Contents**

Administrative Matters
(---) 0:05

1. Student attendance.
2. Announcements, etc.

Overview of Anatomy and Physiology
(0:05) 1:00

1. **Skeletal System and Body Cavities.** The skeletal system consists of the bones that form the support framework of the body; they also protect body organs.
   - a. **Skull.** The skull consists of the cranium (which contains the brain) and the face.
   - b. **Spinal Column.**
     - 1) The spinal column encloses the spinal cord.
     - 2) The brain connects with the spinal cord through a large opening at the base of the skull in the center of the upper neck.
     - 3) The spinal column is the central supportive bony structure of the body and consists of 33 bones known as vertebrae.
     - 4) The spine is divided into five sections:
       - a) Cervical spine-neck
       - b) Thoracic spine-upper back
       - c) Lumbar spine-lower back
       - d) Sacrum
       - e) Coccyx or tail bone
   - c. **Thoracic (Rib) Cage**
     - 1) The chest is enclosed by 12 pairs of ribs which are attached to the thoracic vertebrae in back; the top 10 ribs are attached to the sternum (breastbone) in front.
     - 2) The clavicle (collarbone) connects with the sternum (breastbone).
     - 3) The rib cage encloses the heart and lungs—the vital organs of the body. The diaphram is a muscle which moves up and down while breathing; it separates the chest cavity from the abdominal cavity.
   - d. **Abdominal Cavity**
     - 1) The back boundary of the abdominal cavity consists of:
       - a) The lumbar spine
       - b) The sacrum
       - c) The coccyx (tail bone)
     - 2) The abdomen contains organs of digestion and excretion including the liver, gallbladder, spleen, pancreas, kidneys, stomach, intestines, bladder and rectum.
     - 3) The abdomen also contains female reproductive organs.
     - 4) The lower part of the abdomen is more properly called the pelvic cavity.
   - e. **Pelvic Cavity**
     - 1) The pelvic cavity is bounded by the sacrum, hip bones and the pubis; it is continuous with the abdominal cavity.
     - 2) The pelvic cavity protects the lower abdomen: the bladder, the rectum and the internal female sexual organs.
   - f. **Lower Extremities**
     - 1) The lower extremities extend from the hips to the toes.
     - 2) The bone in the upper leg (thigh) is known as the femur.
     - 3) The bones in the lower leg are known as the tibia and fibula
   - g. **Upper Extremities**
     - 1) The upper extremities extend from the shoulders to the fingertips.
     - 2) The bone in the arm is known as the humerus.
     - 3) The bones in the forearm are known as the radius and ulna

Instructor's Notes

If new instructor introduce self and instructor aides.

Explain that this lesson covers only a brief overview of anatomy and physiology. Each system will be covered in subsequent lessons.

Display anatomic chart and identify major system elements and body cavities. If available, refer to skeleton and torso with removable organs.

Explain how diaphragm works.

Identify each bone.

Identify each bone.

27

Time (Elapsed) Actual | **Contents**

2. **Muscular System.** The muscular system consists of the tissue that contracts and relaxes to permit body movement or functions.
   a. **Voluntary Muscles**–those which are controlled consciously, e.g., the skeletal muscles that permit us to move.
   b. **Involuntary Muscles**–Those which work automatically, for example, the diaphragm which permits us to breathe.
   c. **Cardiac Muscle**–the walls of the heart are a special type of involuntary muscle that keeps the heart functioning automatically.
3. **Nervous System.** The nervous system consists of the brain, spinal cord, and nerves that control and permit all body activities and sensations. A muscle will not move if the nerves which serve it are cut.
4. **Respiratory System.** The respiratory system consists of the organs of the body which enable breathing. It provides for the intake of oxygen needed by the body and the release of carbon dioxide and other substances. Main elements are:
   a. Nose and mouth
   b. Pharynx
   c. Larnyx
   d. Trachea
   e. Bronchi
   f. Lungs
5. **Circulatory System.** The circulatory system consists of the heart (a pump) and a system of arteries which transport blood containing oxygen to all body systems, capillaries through whose thin walls oxygen and other products are exchanged with body cells, and veins which transport blood containing waste products from body cells to be eliminated.
6. **Digestive System.** The digestive system consists of the organs which enable us to eat, digest, and eliminate foods, including:
   a. Mouth and throat
   b. Esophagus
   c. Stomach
   d. Liver
   e. Gallbladder
   f. Pancreas
   g. Intestines
   h. Rectum
7. **Genitourinary System.** The genitourinary system consists of the organs which enable us to eliminate certain waste materials filtered from the blood and to reproduce, including:
   a. Kidneys
   b. Ureter
   c. Urethra
   d. Bladder
   e. Male and female reproductive organs.

Topographic Anatomy
(1:05) 0:15

1. Right and left—the patient's right and left.
2. Surface:
   a. Anterior—front
   b. Posterior—rear
3. Midline—a vertical line dividing the body into right and left halves.
4. Proximal and distal:
   a. Proximal—location on an extremity which is nearer to the trunk; location on the trunk which is nearer to the midline or to the point of reference named.
   b. Distal—opposite of proximal
5. Superior and inferior:
   a. Superior—toward the head
   b. Inferior—toward the feet
6. Student practice.

Instructor's Notes

Refer to anatomic chart.

Give other examples.

Refer to anatomic chart.

Refer to anatomic chart.

Refer to anatomic chart.

Refer to anatomic chart.

Refer to illustration of body in standard anatomical position and give examples of each term.

Have class practice use of each term.

Time (Elapsed) Actual	Contents
Ten-Minute Break (1:20) 0:10	
Diagnostic Signs (1:30) 0:20	

1. **Signs vs. Symptoms.** Throughout the course, reference will be made to signs and symptoms; therefore, an initial definition of their meaning is in order.
    a. **A Sign** is something the rescuer sees, hears or feels; for example a pale face, no respirations, cold skin.
    b. **A Symptom** is something the patient tells about himself, that is, he feels nauseous, his back hurts, he has no sensation in the extremities.
2. **Use in Diagnosis.** The rescuer will learn many signs and symptoms throughout the course and will learn to combine them into a meaningful diagnosis of the patient's condition.
3. **Overview of Signs.** A brief overview of the important diagnostic signs is given below:
    a. **Pulse**
        1) The pulse is the pressure wave generated by the heartbeat and carried along the arteries.
        2) The normal pulse rate for adults is 60 to 80 beats per minute; a normal rate for children is 80 to 100 beats per minute.
        3) The pulse is taken any place where an artery passes over a bony prominence or lies near the skin.
        4) The pulse can be:
            a) Absent
            b) Slow or fast
            c) Weak or pounding
            d) Irregular
    b. **Respirations**
        1) The normal respiratory rate can vary widely. It is usually between 12 and 20 breaths per minute.
        2) Respirations can be:
            a) absent
            b) slow or fast
            c) shallow or deep
            d) gasping, labored, or choking
    c. **Blood Pressure**
        1) Blood pressure is the pressure that the circulating blood exerts against the walls of the arteries. It is measured in mm Hg at two levels:
            a) systolic—contraction of heart
            b) diastolic—relaxation of heart
        2) It is measured by a device known as a sphygmomanometer.
        3) Blood pressure varies with age and sex. In the male, normal systolic is about 100 plus the age of the patient up to 140 to 150 mm Hg. Normal diastolic is 65 to 90 mm Hg. Both pressures are 8 to 10 mm Hg lower in females.
        4) Blood pressure
            a) can be high
            b) can be low
            c) can fall rapidly
    d. **Temperature**
        1) Normal body temperature is 37.0 C. (98.6 F.) degrees.

Indicate that this lesson provides only an overview of diagnostic signs. Each sign will be repeated in subsequent lessons and the EMT-A will learn to put them together to identify a patient's condition.

Have each class member find his own radial and carotid pulse.

2) In emergency care, temperature is estimated by feel, using the back of the hand on the patient's skin; in some situations actual temperature should be measured with a thermometer.

3) The skin is largely responsible for temperature regulation by radiation of heat and evaporation of water.

4) The skin can be:

a) cold or hot

b) wet, clammy or dry

e. **Skin Color**

1) Skin color is a useful sign of lightly pigmented people.

2) Skin color can be:

a) white, pale or ashen

b) red or flushed

c) blue (for people with dark pigmentation, blue may be noted around the fingernails, palms of hands, and mouth)

3) **Capillary refilling**

a) Return of color in nail beds after blanching.

f. **Pupils of the Eyes**

1) The pupils of the eyes are normally equal in size and constrict when exposed to light

2) The pupils can be:

a) dilated

b) constricted

c. unequal

d. fixed

g. **Level of Consciousness**

1) The normal person is alert, oriented and responds to vocal or physical stimuli.

2) A person's state of consciousness may range from normal to mildly confused, disoriented, or unconscious.

h. **Inability to Move on Command**—an indicator of paralysis.

1) The normal conscious person can move his body when requested to do so.

2) A person may not be able to move his legs, both his arms and his legs, or one side of his body.

i. **Reaction to Pain**—an indicator of paralysis.

1) The normal person can feel someone touch his body.

2) A person may have no sensation or a numb feeling in arms and/or legs or certain parts of the body.

4. **Medical Identification Symbols**

a. People with special medical problems (for example, diabetes, epilepsy, acute allergic reactions) frequently wear a medical identification symbol on which the nature of the problem is indicated.

b. These are usually worn as a bracelet or necklace but may be carried in card form in a purse or wallet.

c. The EMT-A should always search for such symbols on unconscious or stuperous patients since they can give valuable information about the wearer and care that he needs.

Discuss the use of A.V.P.U. or Glasgow Coma scale as standardized measurement devices if used in the area

Refer to illustration of medical identification symbols.

Time (Elapsed) Actual | **Contents**

Patient Survey
(1:50) 0:40

1. **Stages.** At the emergency scene, patient examination must be performed. It is performed in two stages:
   a. checking for and controlling life-threatening problems—the primary survey.
   b. Checking for and stabilizing injuries not threatening to life.

2. **Primary Patient Survey.** The procedures for the life-threatening survey are accomplished simultaneously not sequentially. The EMT-A will feel, talk and observe.

   a. **State of Consciousness.**
      1) Establish responsiveness
      2) Check pupils

   b. **Respirations**
      1) Observe chest and feel for exhaled air at mouth and nose.
      2) Assess rate, quantity, quality.
      3) Don't forget the special case of the laryngectomee.

   c. **Pulse**
      1) Establish existence
      2) Assess rate and quality

   d. **Bleeding/Shock**
      1) Observe for life-threatening external bleeding.

3. **Secondary Survey.** In the secondary survey, the EMT-A makes a head-to-toe examination of the patient. He systematically observes and feels for wounds and deformities. He asks conscious patients if they feel pain or sensation. For unconscious patients, he checks for indications of pain, sensation and reflex actions.

Note: The EMT-A should always observe the accident scene and check witnesses to attempt to determine any mechanism of injury.

Note: Emphasize importance of establishing rapport with conscious patient-identifying self, obtaining and using patient's name, explaining intended movements and procedures reassuring patient.

   a. **Head**
      1) Observe for confusion, unresponsiveness, unconsciousness.
      2) Check pupils.
      3) Observe for lacerations and contusions about the face and scalp.
      4) Feel gently for depressions in the skull.
      5) Check ears and nose for fluid or blood.
      6) Check mouth for foreign objects, bleeding.

   b. **Neck**
      1) Observe for cuts, bruises, deformities.
      2) Feel for areas of tenderness, deformities.

   c. **Chest**
      1) Check for bruises, pain, deformities.
      2) Check that both sides of the chest expand normally upon inspiration.

   d. **Back and Buttocks**
      1) Check for cuts, bruises, pain deformities.

Instructor's Notes

Demonstrate procedures on a student. Explain what is being done, implications of what is found, and actions that should be taken. Stress importance of asking witnesses for information. NOTE: The EMT-A should always check for medical identification symbol.

Discuss implications.

Discuss implications.

Discuss implications.

Discuss signs.
NOTE: If there are multiple casualties, check each patient, stopping only to administer to those with life-threatening problems.

Explain that an examination for injuries will be demonstrated even though implications of all signs for all injuries have not been covered. They will be covered in subsequent lessons. In this lesson, the student will be responsible only for demonstrating procedures for examining a patient. Emphasize that the order of the exam will vary dependent upon the patient's condition and findings. Demonstrate on a student what you are doing, implications of what you find and actions you would take.

Stress importance of maintaining neutral position in trauma patients.

Time (Elapsed) Actual	Contents

e. **Abdomen and Pelvis**
   1) Check abdomen for tenderness, rigidity.
   2) Compress pelvis gently.

f. **Lower Extremities**
   1) Check for cuts, bruises, pain deformities, unusual positions.
   2) Check for sensation and pulse.
   3) Ask patient if he can move his legs.

g. **Upper Extremities**
   1) Check for cuts, bruises, pain, deformities, unusual positions.
   2) Check for sensation and pulse.
   3) Ask patient if he can move arms.

h. **Medical Alert Symbols**
   1) Check for tags, bracelets, etc.

i. **Interview**
   1) Obtain pertinent medical history.
   2) Note mechanism of injury
   3) Information on current medical problem.

j. **Vital Signs** (Pulse, Blood Pressure, Respirations)
   1) Obtain and record
   2) May occur elsewhere during the exam dependent upon patients condition.
   3) Repeat and record at frequent intervals.

Practice (Groups of No More Than 6 Students Per Manikin or Item of Equipment)
(2:30) 0:20

1. Each student should practice taking blood pressure of other students using the following steps.
   a. Fastening and inflating the cuff.
   b. Placing the diaphragm or bell over the brachial artery.
   c. Releasing air and recording systolic and diastolic pressures.

   Note: The student should also measure systolic pressure by palpation.

2. Each student should perform an examination of a fellow student for life-threatening problems. He should describe what he is doing, implications of his finding and actions to be taken. The instructor should provide any needed information. The student's performance should include:
   a. Checking for state of consciousness.
   b. Checking respirations.
   c. Checking pulse.
   d. Checking for life-threatening bleeding and shock.

3. Each student shall perform secondary survey on fellow students. He should describe what he is doing, implications of his findings and actions to be taken. The instructor should provide any needed information. The student's performance should include:
   a. primary survey
   b. head
   c. neck
   d. chest
   e. abdomen and pelvis
   f. lower extremities
   g. upper extremity
   h. medical alert symbols
   i. interview
   j. vital signs

Summary and Questions
(2:50) 0:10

1. Class questions or comments on the topic of lesson.
2. Demonstration by selected class members of achievement of lesson objectives.

Divide class into groups of 6. Monitor and critique each student.

Emphasize that additional opportunities will be provided for the student to practice.

Question class members on selected objectives.

Lesson 3
Airway Obstruction and Respiratory Arrest

Objectives

At the conclusion of Lesson 3, the instructor will have provided sufficient information, demonstration, and practice to the student, to ensure his/her ability to:

- Describe in narrative the significance of oxygen to body tissues, particuarly the brain:
- List five components of the respiratory systems and the functions of each.
- List three signs of adequate air exchange.
- Demonstrate on a manikin, designed for CPR 5 airway management techniques.
- Demonstrate on a manikin, designed for CPR the AHA method of clearing an obstructed airway in the following situations:
  - Conscious adult
  - Adult who becomes unconscious
  - Unconscious adult
  - Conscious infant
  - Unconscious infant

Requirements

Material: (one for each student)

- JAMA Supplement
- Rationale sheet for AHA standards in techniques used for clearing obstructed airways in the:
  —Conscious adult
  —Unconscious adult
  —Conscious infant
  —Unconscious infant
- First Aid for Laryngectomees.

Equipment:

- Adult resuscitation manikins (one for each four students)
- Infant resuscitation manikins (one for each six students)
- Antiseptic solution and gauze pads.
- Chalkboard
- 16 mm projector
- 35 mm projector
- Movie screen

Illustrations:

- Charts and/or models of:
  —Respiratory system (include lungs, alveoli, diaphragm, pleura)
  —Airway obstruction by tongue
  —Trachea of partial and total neck breathers.

Visual Aids:

- 16 mm film—On obstructed airway maneuvers and artificial respiration according to current AHA standards.
- 35 mm slides AAOS or similar

Instructors:

- Respiratory therapist who is currently certified as an instructor in AHA standards of CPR.
- Assistants certified as CPR Instructors according to AHA standards (one of each six students).

Instructor Preparations/ Tasks

The Instructor Should:

- Review the lesson outline to assure understanding of contents and procedures.

- Review and preview all references and visual aids selected for the lesson by the course administrator.
- Select and prepare appropriate instructional aids in addition to those provided by the course administrator; if desired.
- Be familiar with all visual aid and other equipment to be demonstrated during the lesson.
- Provide the student with a clear understanding of the rationale and techniques for clearing and maintaining an open airway.
- Provide the student with ample practical experience in clearing obstructed airways and artificial ventilation procedures.
- Brief all instructor aides as to their role and responsibilities during the lesson.

Instructor's Notes

Time
(Elapsed)
Actual

Contents

Administrative Matters
(--) 0:05

1. Student attendance.
2. Announcements, etc.

Introduction
(0:05) 0:05

1. **Lesson Coverage**
   - a. Design of the respiratory system and how it functions to supply the body with oxygen.
   - b. Signs of adequate and inadequate breathing.
   - c. Methods of maintaining an open air passage.
   - d. Methods of resuscitating the non-breathing patient.
2. **Importance of Oxygen and Respiratory System.**
   - a. **All Living Cells.** All living cells of the body require oxygen to survive.
   - b. **Brain Cells**
     - 1) For cells in the brain and nervous system, oxygen is particularly important.
     - 2) Without oxygen, they will die in 4 to 6 minutes.
     - 3) If brain cells die, the patient may still live, but will not function at his previous level.

   Respiratory System. The respiratory system provides the means by which oxygen is delivered to the body and carbon dioxide and other causes are removed.
3. **Criticality of Lesson**
   - a. A non-breathing patient or a patient with breathing difficulties is a true emergency.
   - b. Skills learned in this lesson are critically important.
   - c. Speedy and correct performance of these skills may mean the difference between life and death to the patient.
4. **Lesson Objectives.** At the end of the lesson, each student will be able to:
   - a. Describe in narrative the significance of oxygen to body tissues, particularly the brain.
   - b. List five components of the respiratory systems and the function of each.
   - c. List three signs of adequate air exchange.
   - d. Demonstrate on a manikin, designed for CPR 5 airway management techniques.
   - e. Demonstrate on a manikin, designed for CPR the AHA method of clearing an obstructed airway in the following situations:
     - 1) Conscious adult
     - 2) Adult who becomes unconscious
     - 3) Unconscious adult
     - 4) Conscious infant
     - 5) Unconscious infant

The Respiratory System
(0:10) 0:10

1. **Anatomy and Physiology.**
   - a. **Pharynx.** Air entering the nasopharynx or oropharynx or food entering the mouth passes to the pharynx.
   - b. **Trachea.**
     - 1) At the base of the pharnyx are two passageways.
     - 2) The esophagus (in back) takes food and liquids to the stomach.
     - 3) The trachea (in front) takes air to the lungs and is known as the windpipe.
   - c. **Epiglottis**
     - 1) A valve called the epiglottis guards the opening of the trachea.
     - 2) It closes when food or liquids are present in the pharynx.
     - 3) Occasionally foods or liquids get past the epiglottis and cause an emergency situation.

Instructor's Notes

If new instructor, introduce self and instructor aides.

Review lesson coverage and objectives. Emphasize criticality of skills and knowledge covered.

Refer to lesson objectives in the Student Study Guide and review with class.

Refer to illustration of respiratory system. Review design and function of each system element.

d. **Larynx.**
   1) The larynx is the first part of the trachea.
   2) It is the "voice box" which contains the vocal cords permitting us to speak.
   3) The Adam's apple is the front portion of the larynx.

e. **Bronchi.** The trachea divides into two smaller tubes, the right and left bronchi, which enter the lungs.

f. **Lungs.**
   1) In the lungs, the bronchi branch into smaller parts until they finally end in millions of tiny air sacs, called alveoli.
   2) Oxygen passes through the thin walls of the alveoli to tiny capillaries.
   3) Carbon dioxide and other waste gases pass from the capillaries to the alveoli and are breathed out into the atmosphere.

g. **Diaphragm and Rib Muscles**
   1) The diaphragm is a muscle that separates the chest cavity from the abdominal cavity.
   2) When the diaphragm and rib muscles contract, the chest cavity enlarges and fills with air.
   3) When the muscles relax, the space becomes smaller and air ir forced out.
   4) The mechanics of breathing can be compared to the operation of a bellows: when it is open, air enters; as it closes, air is forced out.

h. **Pleura**
   1) The layer of slippery tissue covering the lungs is known as the pleura. A layer of this tissue also lines the chest cavity. In between is a thin layer of fluid.
   2) When the chest expands, the lung is pushed out by ambient air pressure.
   3) If either of these pleura is torn, the capability for normal expansion of the lungs is lost.

2. **Control of Breathing**
   a. Breathing is controlled by the brain.
   b. Although we can hold our breath or breathe faster or deeper if we wish, we cannot maintain these conditions indefinitely.
   c. The brain is aware of oxygen and carbon dioxide levels in all parts of the body. When these become abnormal, it will override other conditions (e.g., holding one's breath) and take over operation of the respiratory system.

Signs
(0:20) 0:05

1. **Adequate Breathing**
   a. Chest and abdomen RISE and FALL as air is breathed in and out.
   b. In most cases, air can be **heard** coming out of the mouth.
   c. Air can be FELT coming out of the nose and mouth.

2. **Inadequate Breathing**
   a. No air can be heard or felt at the nose and mouth, or the patient is struggling to breathe and muscles on the front of the neck stand out prominently.
   b) The breathing is noisy or has a bubbling sound.
   c) The breathing is slow; normal breathing rate of adults is between 12 and 10 breaths per minute.
   d) The patient is cyanotic.
      1) Cyanosis is a grayish-blue discoloration of the skin and membranes around the lips, ears, nailbeds, and sometimes the whole body.
      2) For non-whites, the nails, palms of hands and mouth should be examined for signs of cyanosis.

Instructor's Notes

Refer to illustration of alveoli.

Refer to illustration of lungs, rib cage, pleura and diaphragm.

Demonstrate checking a manikin for signs of breathing.

Time (Elapsed) Actual | **Contents**

Opening the Airway
(0:25) 0:10

1. **Obstruction by the Tongue.** In an unconscious patient, muscles relax and the tongue can fall back and obstruct the airway.
2. **Techniques of Care.**
   a. **Head-Tilt Chin Lift Maneuver.** The lower jaw is lifted by the fingers of one hand and moved forward. The other hand presses on the forehead to tilt the head back.

   b. **Head-Tilt Neck Lift Maneuver.** By placing one hand on the patient's forehead and the other under his neck, the head is tilted back and the neck is extended.

   c. **Coma Position.** Placing the non-trauma patient on his side permits the tongue to fall forward and the airway to open. It also permits saliva and mucous to drain out. The neck should be extended.

   Note: These techniques should not be used if a broken neck or upper spinal cord injury is suspected.
3. **Need for Pulmonary Resuscitation.** If breathing does not start spontaneously, artificial respiration should be started immediately.
4. **Suspected Spine Injuries**
   a. **Problem**

      1) A cervical spine injury must be suspected in all accident cases.

      2) Hyperextension of the neck and any movement of the head must be avoided in order to prevent further injury to the spine.

   b. **Technique.** To open the airway, the EMT-A uses a modified jaw-thrust maneuver. The EMT-A should:

      1) Place his hands on either side of the patient's head so the neck is maintained in a fixed, neutral position without being extended.

      2) Use the index fingers to move the jaw forward.

Pulmonary Resuscitation
(0:35) 0:15

1. **Oxygen in Inhaled and Expired Air.**
   a. The atmosphere contains about 21% oxygen.

   b. Of the 21% inhaled, 5% is used by the body and the remainder (16%) is exhaled.

   c. Thus a rescuer can deliver 16% oxygen to a non-breathing patient by using his own exhaled breath.
2. **Mouth-to-Mouth Technique.** Procedures are:
   a. Establish unresponsiveness, shake and shout.

   b. Open the airway—place one hand on the patient's forehead and one on the chin to hyperextend neck.

   c. Establish breathlessness, look, listen and feel.

   d. Pinch the nose closed using thumb and index finger of hand exerting pressure on the forehead.

   e. Open mouth widely, take a deep breath, make a tight seal around the patient's mouth, and blow air into the patient's mouth until the chest rises.

   f. Remove the mouth to allow air to come out of the patient's airway.

   g. To start, give four breaths in rapid succession without waiting for the lungs to deflate completely.

   h. Ventilate the lungs 12 times per minute (once every 5 seconds).
3. **Mouth-to-Nose Technique.**
   a. It may be difficult or impossible to use the mouth-to-mouth technique for many reasons, for example:

Instructor's Notes

Refer to illustration of airway obstruction by the tongue.

According to AHA standards preference should be given to head-tilt chin lift.

Demonstrate on a manikin.

Demonstrate on a student or manikin.

Time (Elapsed) Actual | **Contents**

1) There may be a severe injury in the mouth region.

2) The rescuer may not be able to make a tight seal because the patient has a large mouth, no teeth, etc.

b. Procedures are:

1) Establish unresponsiveness and call for help.

2) Tilt the patient's head back with one hand on the forehead.

3) Establish breathlessness.

4) Use the other hand to lift the patient's lower jaw: this seals the lips.

5) Take a deep breath, seal the lips around the patient's nose and blow until the chest rises.

6) Remove mouth and let patient exhale.

7) If necessary, open patient's mouth during exhalation.

8) Give four deep and quick breaths to start and then repeat cycle every 5 seconds as with the mouth-to-mouth technique.

4. **Variations for Infants.** Procedures for infants and small children are:

a. Do not exaggerate the head tilt since forceful backward tilting may obstruct breathing passages.

b. Make a seal around BOTH mouth AND nose.

c. Use less volume to inflate the lungs.

d. Inflate lungs once every 3 seconds.

5. **Variations with Jaw Thrust Maneuver.**

a. For mouth-to-mouth resuscitation, use the cheek to seal the nose—this is difficult and tiring to perform.

b. For mouth-to-nose resuscitation, use the cheek to seal the mouth and do not retract the lower lips with the thumbs.

6. **Gastric Distention**

a. Artificial ventilation frequently causes distention of the stomach.

b. Slight distention should be ignored.

c. If there is marked distention causing ineffective air exchange, moderate pressure should be exerted by one hand between the navel and the rib cage after rolling the patient onto his side.

d. If the patient vomits, sweep or suction the mouth and continue.

Ten-Minute Break
(0:50) 0:10

The Laryngectomee (Neck Breather)
(1:00) 0:10

1. **The Condition.**

a. Some persons have all or part of their larynx removed through surgery.

b. These persons have a hole (known as a stoma) in the trachea.

c. Those whose complete larynx has been removed breathe only through the stoma.

d. Those whose larynx has been partially removed breathe both through the stoma and through the nose and mouth. In the partial neck breather, a tube graft from just within the stoma connects with the base of the tongue and provides a so-called speaking tube.

e. Laryngectomees are rare; however, the rescuer should be aware that such individuals exist and how to care for them. If there is not exhaled air at nose and mouth, he should always check the patient's neck.

Instructor's Notes

Demonstrate on an infant manikin.

Demonstrate on a manikin.

Demonstrate on a manikin.

Refer to illustration of trachea or partial and total laryngectomees.

2. **Airway Care Procedures.**
   a. Remove all coverings (e.g., scarves, ties, necklaces) from the stoma area.
   b. Clear the stoma of foreign matter.
   c. Make a seal with your mouth over the stoma and blow until the chest rises.
   d. If the chest does not rise, suspect a partial neck breather and seal the nose and mouth with one hand and repeat the process. To seal the nose and mouth, pinch off the nose between the third and fourth fingers, seal the lips with the palm of the hand, place the thumb under the chin and press upward and backward.
   e. When the chest rises, remove your mouth from the stoma and permit the chest to fall.

Airway Obstruction
(1:10) 0:20

1. **Importance of Ventilating Lungs First.**
   a. The rescuer should NOT look for foreign bodies in the airway unless their presence is known or strongly suspected.
   b. Efforts to ventilate the lungs will reveal whether foreign bodies are present.
2. **Loose Material**
   a. Foreign material (blood, mucus, loose teeth, food, etc.) in the airway can prevent successful ventilation of the lungs. If attempts at ventilation are unsuccessful, the EMT-A should:
      1) Turn the patient's head or entire body to one side.
      2) Force the mouth open by applying pressure with the thumb on the upper back molars and with the index finger on the lower back molars—the "cross finger" technique.
      3) Sweep the index and middle fingers of the other hand across the back of the patient's throat.
      4) Roll head back and attempt artificial ventilation.

   b. If a spine injury is suspected, the EMT-A should maintain the patient's head, neck and torso in strict alignment.
3. **Lodged Material**
   a. If the patient is choking from a foreign object caught in his throat, emergency care procedures include back blows and manual thrusts.
      1) **Back Blows.** The EMT-A should deliver four sharp blows with the heel of the hand to the patient's spine between the shoulder blades.
      NOTE: Infants and small children should be picked up, and inverted over the EMT's arm. The EMT-A should deliver light blows between the shoulder blades.
      2) **Abdominal Thrust**
         a) **Procedures.** The EMT-A should:
         Stand behind a standing or seated patient and wrap his arms around his waist.
         Grasp one fist with the other hand and place the fist, thumb side, against the patient's abdomen, slightly above the navel and below the xiphoid.
         Press the fist into the patient's abdomen with a quick inward and upward thrust.
         NOTE: Do not use on infants.

         b) **Variation.** The technique can be performed on a supine patient by placing one hand on the other, placing the heel of the bottom hand on the abdomen as above, and pressing into the abdomen with a sharp inward and upward thrust.
      3) **Chest Thrust.** The chest thrust can be used when the patient is an infant, markedly obese or pregnant or if abdominal thrusts prove to be ineffective.
         a) **Procedure.** The EMT-A should:

Instructor's Notes

Demonstrate on a manikin.

Demonstrate on self or manikin. Ask each student to perform technique on himself.

Demonstrate on a manikin and student.

Demonstrate on a manikin.

Ask each student to demonstrate HAND POSITION on fellow student. Do NOT perform actual maneuver.

Demonstrate on a manikin.

Demonstrate on a manikin.

Time (Elapsed) Actual | **Contents**

Stand behind a standing or seated patient and wrap his arms around the patient's lower chest.

Grasp one first with the other hand and place the fist, thumb side, against the lower sternum above the xiphoid.

Press the fist into the patient's chest with a quick backward thrust.

b) **Variation.** For a supine patient, the EMT-A should:

Place the hands in the correct position for CPR and deliver compressions in the same manner.

4) **Combined Procedures**

a) **Conscious Adult.** Identify complete obstruction. Alternate 4 back blows and 4 manual thrusts until effective or patient loses consciousness.

b) **Patient Becomes Unconscious.**

Place patient supine. Call for help. Open airway: attempt ventilation; if unsuccessful: Activate EMS system. Give four back blows. Perform four manual thrusts. Check for foreign body—and sweep with finger. Attempt ventilation and repeat as necessary.

c) **Patient Found Unconscious**

Establish unresponsiveness. Call for help. Open airway; establish breathlessness. Attempt to ventilate. If unsuccessful, reposition head and try again. Activate EMS system. Give four back blows. Perform four manual thrusts. Check for foreign body and sweep. Attempt ventilation and repeat as necessary.

Practice (Groups of no more than 6 Students per Manikin)
(1:30) 1:15

1. Each student should practice the following skills on an adult manikin:
   a. Head-tilt chin-lift maneuver.
   b. Head-tilt neck-lift maneuver.
   c. Modified jaw-thrust maneuver for patient with a suspected spine injury.
2. Each student should practice mouth-to-mouth and mouth-to-nose resuscitation of an adult manikin with and without a spine injury using the following steps:
   a. Establishing unresponsiveness.
   b. Call for help.
   c. Opening airway: establishing breathlessness.
   d. Ventilating lungs; if unsuccessful, repositioning head and reventilating.
   e. Dislodging obstructions (by alternating blows and manual thrusts) checking for foreign matter.
   f. Ventilating lungs.
   g. Repeating "e" and "f" as necessary.
   h. Maintaining ventilation.
3. Each student should practice resuscitating an infant manikin using the following steps:
   a. Establish unresponsiveness.
   b. Call for help.
   c. Opening airway; establishing breathlessness.
   d. Ventilating lungs.
   e. Dislodging obstruction; checking for foreign material.
   f. Ventilating lungs.
   g. Repeating "e" and "f" as necessary.
   h. Maintaining ventilation.

NOTE: All students not working directly on a manikin should watch students who are, and should attend to the instructor's critique.

Instructor's Notes

Ask each student to demonstrate HAND POSITION on fellow student. Do NOT perform actual maneuver.

Demonstrate on a manikin.

FOLLOW LATEST HEART ASSOCIATION PROCEDURES.

Demonstrate lightly on a person.

Demonstrate on a manikin.

Demonstrate on a manikin.

Divide class into groups of 6.

Monitor and critique each student. Permit student to practice until they can perform each step without error.

Provide a 10-minute break during the practice session.

Follow latest Heart Association procedures. Include conscious and unconscious adult procedures.

FOLLOW LATEST HEART ASSOCIATION PROCEDURES.

Time **(Elapsed)** **Actual**	**Contents**
	NOTE: The instuctor should use the practice period not only for perfection of skills but also for emphasis of all lesson coverage required for students to achieve the lesson objectives.
Summary and Questions (2:45) 0:15 (3:00)	1. Class questions or comments on the lesson objectives. 2. Demonstration by selected class members of achievement of lesson objectives.

Instructor's Notes

Question class members on lesson objectives.

Lesson 4
Cardiac Arrest

Objectives

At the conclusion of Lesson 4, the instructor will have provided sufficient information, demonstration, and practice to the student, to ensure his/her ability to:

- List four components of the circulatory system and the function of each.
- List two specific signs of cardiac arrest.
- List three possible complications of CPR.
- List three instances when CPR, once initiated, may be terminated.
- Demonstrate on a manikin, the current AHA sequences and techniques for the following CPR cases:
  —single rescuer (adult and infant)
  —infant and adult CPR while transferring to an ambulance

Requirements

Material: (one for each student)

- Rationale sheets for AHA standards in CPR sequences and techniques used for the following cases:
  —single rescuer (adult)
  —team rescue (adult)
  —single rescuer (infant)
  —infant and adult CPR while transferring to an ambulance

Equipment:

- Adult resuscitation manikin (one for each two students)
- Infant resuscitation manikin (one for each six students)
- Antiseptic solution and gauze pads.
- Ambulance cot (one for each 10 students)
- Chalkboard
- 35mm projector
- 16mm projector
- Movie screen

Illustrations:

- Charts and/or models of:
  —circulatory system (include heart, lungs, vessels)
  —signs and symptoms of cardiac arrest

Visual Aids:

- 16mm film—on CPR according to American Heart Association Standards
- 35mm slides—AAOS or similar

Instructors:

- Registered Nurse or Registered Respiratory Therapist certified as a CPR instructor to AHA standards.
- Assistants trained in CPR (one for each six students)

Instructor Preparation/ Tasks

The Instructor should:

- Review the lesson outline to assure understanding of contents and procedures.
- Review and preview all references and visual aids selected for the lesson by the course adminstrator.
- Select and prepare appropriate instructional aids in addition to those provided by the course administrator; if desired.
- Be familiar with all visual aids and other equipment to be demonstrated during the lesson.
- Provide the student with a clear understanding of the rationale and techniques for administering efficient CPR.
- Provide the student with ample practical experience in all aspects of CPR.
- Brief all instructor aides as to their roles and responsibilities during the lesson.

Time (Elapsed) Actual | **Contents**

Administrative Matters'(--) 0:05)

1. Student attendance.
2. Announcements, etc.

Introduction
(0:05) 0:05

1. **Lesson Coverage.**
   - a. Design of the circulatory system and heart and how they function to provide the body cells with oxygen.
   - b. Physical structure of the chest cavity and organs located near the heart.
   - c. Signs of cardiac arrest.
   - d. Technique of cardiopulmonary resuscitation.
   - e. Complications if cardiopulmonary resuscitation is not performed correctly.
2. **Importance of Oxygen.** Re-emphasis of importance of oxygen to body tissues, particularly the brain.
3. **Criticality of Lesson.** As with the previous lesson, cardiac arrest represents an immediate life threat; therefore:
   - a. Skills learned in this lesson are critically important.
   - b. Correct performance of these skills may mean the difference between life and death to the patient.
4. **Lesson objectives.** At the end of the lesson, each student will be able to:
   - a. List four components of the circulatory system and the function of each.
   - b. List two specific signs of cardiac arrest.
   - c. List three possible complications of CPR.
   - d. List three instances when CPR, once initiated, may be terminated.
   - e. Demonstrate on a manikin, the current AHA sequences and techniques for the following CPR cases:
     - 1) single rescuer (adult and infant)
     - 2) team rescuer (adult)
     - 3) infant and adult CPR while transferring to an ambulance

The Circulatory System
(0:10) 0:10

1. The circulatory system consists of the heart and a series of tubes that carry blood throughout the body.
2. The tubes include:
   - a. **Arteries** that carry blood rich in oxygen and other materials TO other body cells.
   - b. **Veins** that carry deoxygenated blood and waste products FROM the body cells.
   - c. **Capillaries** through which oxygenated and deoxygenated blood are exchanged with the body cells.
3. In combination with the respiratory system, the circulatory system serves to provide the body with the oxygen needed for life.

The Heart
(0:20) 0:20

1. **Design of the Heart**
   - a. The heart is a muscular organ approximately the size of a man's clenched fist.
   - b. A wall (septum) divides the heart into two upper chambers (atriums) and two lower chambers (ventricles).
2. **The Heart** as a Pump
   - a. The heart is a two-sided pump.
   - b. The left side of the heart receives oxygenated blood from the lungs and pumps it out to all body parts through a system of arteries.
   - c. The right side of the heart receives from the veins blood that has circulated through the body and pumps it to the lungs to be re-oxygenated.
   - d. A system of one-way valves keeps blood moving in the proper direction and prevents backflow of the blood.

Instructor's Notes

If new instructor, introduce self and instructor aides.

Review lesson coverage and objectives. Emphasize criticality of skills and knowledge covered.

Refer to lesson objectives in the Student Study Guide and review with class.

Refer to illustration of circulatory system. Describe design and function of system elements.

Discuss the exception of pulmonary arteries and veins.

Refer to illustration of design of the heart.

Time (Elapsed) Actual | **Contents**

3. **Location**
   a. The heart is located in the chest cavity under the sternum and the lungs. Pressure on the sternum will compress the heart and produce an artificial circulation.
   b. The liver and spleen are located below the heart—the liver to the right and center and the spleen to the left.
   c. Laceration of the lungs, liver or spleen could prove fatal to the patient—the first due to associated breathing difficulties and the others due to severe bleeding since they both have a large blood supply. It is therefore especially critical that the skill learned in this lesson be learned correctly.

Signs of Cardiac Arrest
(0:40) 0:05

1. The patient is not breathing.
2. The patient has no carotid pulse.

Technique of Cardiopulmonary Resuscitation
(0:45) 0:60

1. **General procedures.**
   a. Firm Surface. Place patient on a firm surface, such as the ground or a spine board: CPR cannot be performed with the patient in a sitting position. Elevation of the lower extremities, while keeping the rest of the body horizontal, MAY promote venous return and aid circulation of the blood during CPR. Pneumatic Counter Pressure Device Trousers may assist in venous return as well as differentially shunting blood to the brain from the abdomen and lower extremities. Patient must be supine.
   b. **Ventilation.** Adequately ventilate the lungs with oxygen since compression without ventilation is useless.
   c. **Location of Hands.** Locate the hands on the lower half of the sternum avoiding the xiphoid process. Use sternal notch to locate position.
   d. **Positioning of Hands.** Place the heel of one hand on top of the other, with fingers raised so that no contact is made with the ribs.
   e. **Positioning of Body.** Lean over the patient with elbows straight so that the weight of your body is assisting in compression of the sternum.
   f. **Amount of Compression.** For an adult, compress the sternum about 1 1/2 to 2 inches vertically downward. Compressions should be 50% compression, 50% relaxation.
   g. **Rate of Compression.** Compress the sternum approximately 80 times per minute for single rescuer and 60 times per minute for team rescuer.
2. **One-Man Technique**
   a. Establish unresponsiveness.
   b. Call for help.
   c. **Airway.** Assure an open airway.
   d. **Breathlessness.** Look, listen and feel.
   e. **Ventilation.** Ventilate the lungs quickly four times.
   f. **Pulse.** Check carotid.
   g. Activate EMS system.
   h. **Compression.** Perform 15 compressions with 2 quick and full ventilations.
   i. **Ventilations.** Stop compression and give two quick full ventilations.
   j. **Alternations.** Alternate 15 compressions with 2 quick and full ventilations.
   k. **Recheck.** Pulse after 1 minute.

Instructor's Notes

Refer to illustration of chest cavity showing ribs, heart, lungs, liver, spleen.

Ask a member of the class to give the signs of respiratory arrest. Have each class member find his own carotid pulse and that of another student.

Include a 10-minute break in this section after approximately one hour.

Demonstrate turning the patient who is prone.

Demonstrate on a manikin.

Demonstrate on a manikin.

Demonstrate on a manikin.

Demonstrate on a manikin.

Demonstrate on a manikin. Follow latest Heart Association procedures.

3. **Two-Rescuer Technique.**
   a. **Establish Unresponsiveness.**
   b. Call for help.
   c. **Airway.** Ventilator assures an open airway.
   d. **Establish Breathlessness.**
   e. **Ventilation.** Ventilator ventilates the lungs quickly four times.
   f. **Pulse.** Check carotid.
   g. **Compression.** Second rescuer performs five compressions of the sternum at the rate of 60 per minute. Counting "One-One-thousand", "Two-One-thousand", "Three-One-thousand", etc., will aid the rescuer in maintaining a rate of one compression per second.
   h. **Alternations.** Ventilator interposes one breath after each five compressions.
   i. **Changing Positions.** Compressor calls for a switch when needed. Ventilator gives breath on fifth count and moves to chest. Compressor checks pulse, ventilates and signals to begin.
4. **Infants and Children**
   a. For small children 1 to 8 years, only the heel of one hand is used and the compression should be 1 to 1 1/2 inches, 80 per minute.
   b. For infants, less than one year, only the tips of the index and middle fingers are used and the compression should be 1/2 to 1 inch. 100 per minute. Use brachial pulse check.
   c. Pressure should be exerted over the mid-sternum.
   d. Additional support beneath the back will be required for infants and small children.
5. **Second Rescuer Entering.**
   a. Single rescuer CPR initiated.
   b. Second rescuer appears and identifies self.
   c. Checks pulse for effective compressions.
   d. Calls for stop to check for spontaneous return of pulse.
   e. Begins two rescuer CPR.
6. **Signs of Effective CPR**
   a. A carotid pulse can be felt (when working as a team, the ventilator should feel a pulse with each compression).
   b. Pupils constrict when exposed to light.
   c. Skin color improves.
   d. There may be spontaneous gasping respirations.
   e. There may be spontaneous movement of the patient's arms or legs.
   f. The heart may resume normal beating.

   NOTE: CPR produces a pumping activity that is only 25% to 33% as effective as the action of a normal heart. Thus 90-100% oxygen should be delivered to all patients who have sustained a cardiac arrest as soon as it is available.
7. **CPR Interruption.** CPR should not be interrupted for more than 5 seconds unless it is necessary to move a patient up and down a stairway. Such interruptions should not exceed 15 seconds.
8. **Complications**
   a. Review of the structure of the chest cavity and location of organs proximal to the heart.

Instructor's Notes

Demonstrate on a manikin. Use class member or assistant instructor as second rescuer. Follow latest Heart Association procedures.

Demonstrate on a manikin. Use class member or assistant instructor as second rescuer. Follow latest Heart Association procedures.

Describe and demonstrate system for effecting a smooth change in positions.

Demonstrate on an infant resuscitation manikin. Follow latest Heart Association procedures.

Refer to illustration of chest cavity showing ribs, heart, lungs, liver, spleen.

b. Emphasize the importance of correct performance of the technique and dangers to the patient whether performed correctly or not. The following complications may result if it is not performed correctly, that is:

1) Fractured ribs.
2) Fractured sternum.
3) Lacerations of the liver, spleen, lungs or heart.
4) Damage to the pleura resulting from broken ribs.

9. **Beginning and Terminating CPR**

a. CPR is not indicated for a patient known to be in the terminal stages of an incurable condition, if signed physician orders are present.

b. Once started, CPR should be terminated only when one of the following occurs:

1) The patient's heart resumes normal beating.
2) A physician or other properly trained person responsible for emergency medical services assumes responsibility for the patient.
3) The rescuer is exhausted and unable to continue.
4) The patient is pronounced dead by a physician, coroner or other individual with the legal authority to do so.

Practice (Groups of No More Than 6 Students per Manikin)
(1:45) 0:60

1. Each student should practice one-rescuer cardiopulmonary resuscitation on an adult manikin using the following steps:

   a. Establishing unresponsiveness.
   b. Call for help.
   c. Open airway.
   d. Establish breathlessness.
   e. Ventilate the lungs.
   f. Establish pulselessness.
   g. Activate EMS system.
   h. Perform one-man CPR.

   NOTE: The instructor should require one or more students in each group to clear the airway and remove an obstruction from the airway.

2. Each student should practice one-rescuer cardiopulmonary resuscitation on an infant manikin using the following steps:

   a. Establish unresponsiveness.
   b. Call for help.
   c. Open airway.
   d. Establish breathlessness.
   e. Ventilate the lungs.
   f. Establish pulselessness, brachial.
   g. Activate EMS system.
   h. Perform CPR.

3. Each student should practice two-rescuer cardiopulmonary resuscitation on an adult manikin using the following steps:

   a. Establish unresponsiveness.
   b. Call for help.
   c. Open airway.
   d. Establish breathlessness.
   e. Ventilate the lungs.
   f. Establish pulselessness.

Instructor's Notes

Divide class into groups of 6.

Monitor and critique each student. Permit students to practice until they can perform each step without error. Follow latest Heart Association procedures.

Provide a ten-minute break during the practice session.

63

Time (Elapsed) Actual	**Contents**
	g. Activate EMS system. h. Perform two-man CPR. i. Change positions. 4. Each student should practice two-rescuer cardiopulmonary resuscitation on an adult manikin positioned on a moving stretcher using the steps in 3, above. NOTE: All students not working directly on a manikin should watch students who are and should attend to the instructor's critique. NOTE: The instructor should use the practice period not only for perfection of skills but also for emphasis of all lesson coverage required for students to achieve the lesson objectives.
Summary and Questions (2:45) 0:15 (3:00)	1. Class questions or comments on the topic of the lesson. 2. Demonstration by selected class members of achievement of lesson objectives.

Question class members on selected objectives.

Lesson 5
Manikin Practice and Certification

Objectives

At the conclusion of Lesson 5, the instructor will have provided sufficient information, demonstration, and practice to the student, to ensure his/her ability to:

- Certify to current AHA standards in all areas required of a CPR-Basic Rescuer.

Requirements

Material: (one for each student)

- AHA-CPR Basic Rescuer written exam.
- AHA-CPR Proficiency Test sheets in all areas required for Basic Rescuer certification.
- AHA-CPR Basic Rescuer Class Roster (1 copy only).

Equipment:

- Adult resuscitation manikin (one for each four students).
- Infant resuscitation manikin (one for each six students).
- Antiseptic solution and gauze pads.

Instructors:

- Currently certified instructors (one for each six students) in AHA Standards of CPR.

Instructor Preparations/Tasks

The Instructor Should:

- Review the lesson outline to assure understanding of contents and procedures.
- Be familiar with all visual aids and other equipment to be demonstrated during the lesson.
- Provide the student with ample practical experience to ensure his/her competency level to be adequate to certify as a CPR: Basic Rescuer to American Heart Association standards.
- Brief all instructor aides to their roles and responsibilities during the lesson.

Time (Elapsed) Actual	**Contents**
Administrative Matters (--) 0:05	1. Student attendance. 2. Announcements, etc.
Introduction (0:05) 0:05	1. **Lesson Coverage.** a. Basic rescuer certification 1) Written exam 2) One rescuer CPR 3) Two rescuer CPR 4) Infant CPR 5) Adult obstructed airway procedures 6) Infant obstructed airway procedures. 2. **Lesson Objectives.** a. The student will certify according to AHA standards in all areas required of a CPR-Basic Rescuer.
Written Exam (0:10) 0:30	1. Written exam based on AHA guidelines should be administered.
Practical Performance (0:40) 3:10	1. Each student must perform all skills required for AHA certification as a Basic Rescuer. Proficiency requirements should be established by the Lead instructor. 2. American Heart Association Performance tests are included as Appendix A of these lesson plans.
Summary and Questions (3:50) 0:10	1. Class questions or comments on the topic of the lesson. 2. Demonstration by selected class members of achievement of lesson objectives.
(4:00)	

Instructor's Notes

If new, instructor introduces self and instructor aides.

A portion of the class may take their written exam while others begin on practical performance procedures.

Students may be rotated through stations to expedite the certification process. Manikins should be available for remedial practice.

Duplicate as necessary to evaluate each student.

Question class members on selected objectives.

Lesson 6
Practical Use of Airway Adjuncts

Objectives

At the conclusion of Lesson 6, the instructor will have provided sufficient information, demonstration, and practice to the student to ensure his/her ability to:

- List the indications, purpose and functions of the following airways:
  - —Oropharyngeal airways
  - —Nasopharyngeal airways
  - —Portable suction
  - —Oxygen equipment and delivery systems: nasal cannula, simple face mask, venturi mask, etc.
  - —Pocket valve mask
  - —Bag valve mask
- Demonstrate on manikin the correct sequence and techniques for using the following airway adjuncts in stationary and moving patient circumstances:
  - —Oropharyngeal airways
  - —Nasopharyngeal airways
  - —Portable suction
  - —Oxygen equipment and delivery systems: nasal cannula, simple face mask, venturi mask, etc.
  - —Pocket mask system
  - —Bag valve mask system

Requirements

Equipment: (one for each six students)

- Adult resuscitation manikins
- Infant resuscitation manikins
- Oropharyngeal airways
- Nasopharyngeal airways
- Portable suction unit
- Oxygen equipment (include cylinder, regulator, flowmeter and humidifier)
- Nasal cannula
- Face mask/bag
- Venturi mask
- Pocket mask/oxygen inlet valve
- Bag-valve-mask system
- Demand valve resuscitation
- Appropriate quantities of lubricant jelly and antiseptic solution and gauze pads for ALL equipment
- Chalkboard
- 35mm projector
- Movie screen

Illustrations:

- Chart/model depicting proper insertion of:
  - —oropharyngeal airway
  - —nasopharyngeal airway

Visual Aids:

- 35mm slides—AAOS or similar

Instructor:

- Respiratory therapist trained in CPR to AHA Standards.

Instructor Preparation/Tasks

The Instructor Should:

- Review the lesson outline to assure understanding of contents and procedures.
- Review and preview all references and visual aids selected for the lesson by the course administrator.
- Select and prepare appropriate instructional aids in addition to those provided by the course administrator; if desired.
- Be familiar with all visual aids and other equipment to be demonstrated during the lesson.
- Provide the student with a clear understanding of the use and operation of all mechanical aids to breathing that he/she may encounter while providing patient care.
- Provide the student with ample practical experience in the operation of all mechanical aids to breathing demonstrated in the lesson.
- Brief all instructor aides as to their roles and responsibilities during the lesson.

Time (Elapsed) Actual | **Contents**

Administrative Matters
(--) 0:05

1. Student attendance.
2. Announcements, etc.

Introduction
(0:05) 0:05

1. **Lesson Coverage.** Purpose, design features and procedures for using the following equipment:
    a. Oropharyngeal airways
    b. Nasopharyngeal airways
    c. Portable suction equipment
    d. Oxygen equipment
    e. Oxygen delivery systems
        1) Nasal cannula
        2) Face mask
        3) Mask and bag
        4) Venturi mask
    f. Oxygen and ventilation systems
        1) Pocket mask system
        2) Bag-valve-mask system
        3) Demand-valve system
2. **Importance of Lesson**
    a. A person can be given basic life support without the use of mechanical aids.
    b. In many cases, however, mechanical aids make airway care and ventilation easier and more effective.
    c. If oxygen is required, mechanical aids are a necessity.
    d. Oxygen is an important aid to any patient with a breathing difficulty.
    e. Demonstrate how to provide 90-100% oxygen with reservoir device.
4. **Lesson Objectives.** At the end of the lesson, each student will be able to:
    a. List the indications, purpose and functions of the following airways:
        1) Oropharyngeal airways
        2) Nasopharyngeal airways
        3) Portable suction
        4) Oxygen equipment and delivery systems: nasal cannula, simple face mask, venturi mask, etc.
        5) Pocket valve mask
        6) Bag-valve mask
    b. Demonstrate on a manikin the correct sequence and techniques for using the following airway adjuncts in stationary and moving patient circumstances:
        1) Oropharyngeal airways
        2) Nasopharyngeal airways
        3) Portable suction
        4) Oxygen equipment and delivery systems: nasal cannula, simple face mask, venturi mask, etc.
        5) Pocket mask system
        6) Bag valve mask system

Oropharyngeal Airways
(0:10) 0:05

1. **Purpose**
    a. Oropharyngeal airways can be used to maintain an open airway on deeply unresponsive patients.

Instructor's Notes

If new, instructor introduces self and instructor aides.

Review lesson coverage and objectives. Display each piece of equipment as it is mentioned.

Refer to lesson objectives in the Student Study Guide and review with class.

Display adult, child and infant sizes.

b. They should not be used on responsive patients since they may cause vomiting or spasm of the vocal cords.

2. **Use**
   - a. Care is required in inserting the airway since it can force the tongue back into the pharynx and cause an obstruction.
   - b. Procedures of inserting the airway are as follows:
     - 1) Select proper size: corner of mouth to earlobe.
     - 2) Open the patient's mouth using the cross-finger technique.
     - 3) Insert airway with the tip facing upward (toward the roof of the patient's mouth).
     - 4) After contact with soft palate, rotate it 180 degrees and insert it until the flange rests on the lips or teeth (the curve of the airway follows the patient's tongue).

     NOTE: Use of a tongue blade to depress the tongue may ease correct insertion of the airway.

Nasopharyngeal Airways
(0:15) 0:05

1. **Purpose.** A nasopharyngeal airway is not likely to stimulate vomiting and may be used on a conscious patient who cannot maintain an open airway.
2. **Use**
   - a. Select proper size: nose to earlobe.
   - b. Lubricate the airway.
   - c. Insert it through a nostril following the floor of the nose until the flange rests against the nostril.

Suction Unit
(0:20) 0:05

1. **Purpose.** A suction unit permits removal of blood and other liquid materials from the airway.
2. **Design Requirements—Portable Unit**
   - a. The unit should be fitted with a wide-bore, thick-wall, non-kinking tubing and semi-rigid or rigid suction tips.
   - b. Multiple sterile, disposable suction catheters of various sizes should permit suctioning of mouth, pharynx and stoma.
   - c. Rigid pharyngeal suction tips (tonsil suction tips) are best for suctioning the pharynx but may induce vomiting in awake or semi-awake persons.
   - d. The collection bottle should be non-breakable, and a supply of water should be available for rinsing tubes and catheters.
   - e. The vacuum pressure and flow should be adequate for pharyngeal suction.
2. **Use**
   - a. Inspect unit to insure that all parts are assembled.
   - b. Switch on suction clamp tubing and assure that pressure dial registers over 300 mm Hg.
   - c. Attach flexible catheter or rigid tonsil sucker.
   - d. Open the mouth with the cross-finger technique.
   - e. Insert the catheter into the pharynx—length of insertion is distance from mouth to lobe of ear. Insert rigid tonsil sucker with convex side along the roof of the mouth until the pharynx is reached.
   - f. Apply suctioning only after catheter is in position—suctioning should not exceed 15 seconds.

Instructor's Notes

Explain condition and seriousness of vocal cord spasm and aspiration.

Refer to illustration of properly inserted oropharyngeal airway.

Display nasopharyngeal airways. Describe aseptic procedures.

Refer to illustration of properly inserted nasopharyngeal airway.

Display suction unit.

Refer to each component.

Demonstrate use of equipment and suction procedures on manikin.

Describe aseptic procedures.

Reduce pressure for children.

Demonstrate determining distance of insertion on manikin.

Oxygen
(0:25) 0:15

1. **Patients Needing Oxygen**
   a. **Patients Suffering a Cardiac Arrest**
      1) As indicated previously, CPR produces a pumping activity that is only 25% to 33% as effective as the action of a normal heart; thus, oxygen delivery to the blood is impaired.
      2) The patient receiving pulmonary resuscitation or CPR is therefore oxygen-deficient and should receive oxygen of 100% concentration as soon as it is available. However, do not delay initial resuscitation.
   b. **Other Patients.** Several medical and physical conditions result in hypoxia in which there is an inadequate amount of oxygen available to meet the body's needs. These medical conditions will be discussed in subsequent lessons. In general, most patients with respiratory or circulatory difficulties will benefit from supplemental oxygen.
2. **Dangers**
   a. Oxygen supports combustion.
   b. In some chronic disease states like emphysema, administration of oxygen can decrease respiration since, in these patients, a low blood oxygen level is the stimulus for respiration.
   c. Avoid contact with petroleum products.
2. **Oxygen Equipment**
   a. **Cylinders**
      1) Oxygen is usually supplied as a compressed gas in seamless steel or alloy cylinders.
      2) Cylinders of E size and smaller have outlet valves designed to accept pressure-reducing gages of the yoke type which have a pin-indexing safety attachment system.
      3) Cylinders larger than E size are equipped with threaded gas-outlet valves which will not accept a regulator valve unless it fits the specific outlet.
      4) Thus the cylinders are designed so that an oxygen line or regulator cannot mistakenly be attached to a cylinder of another compressed gas.
      5) Pressurized cylinders must be handled carefully since their contents are under pressure.
   b. **Pressure Regulators and Flowmeters.**
      1) Pressure of a full oxygen cylinder will be 2000 to 2200 psi; it must be reduced to 40–70 psi before administration to a patient.
      2) Flowmeters are typically permanently attached to the pressure regulator; they permit oxygen to be delivered to the patient at the desired rate.
      3) Since oxygen in a compressed cylinder is an extremely dry gas, a humidifier should be attached to the flowmeter to prevent excessive dryness of the patient's mucous membranes if prolonged administration of oxygen is anticipated.
   c. **Operating Procedures.** The EMT-A should:
      1) Remove protective cap.
      2) "Crack" the valve.
      3) Attach regulator-flowmeter.
      4) Attach humidifier.
      5) Reduce the pressure.
      6) Regulate the flow.
      7) Connect administering apparatus.
      8) Shut down the apparatus.

Instructor's Notes

Give examples.

Discuss safe practice relative to use of oxygen.

Identify normal stimulus for respiration.

Display oxygen cylinder.

Display and describe indexing systems for available oxygen equipment.

Display and describe pressure regulator, flowmeter, and humidifier.

Demonstrate procedures.

Time (Elapsed) Actual | **Contents**

Equipment for Oxygen Delivery
(0:40) 0:10

1. **Nasal Cannula.**
   a. Oxygen concentrations in inspired air can range from 24 to 50%.
   b. A mouth breather or person with a nasal obstruction derives minimal benefit from this method of oxygen administration.
2. **Face Mask.** With flowrates of 6 to 10 liters per minute, oxygen concentrations of 35 to 60% can be obtained in inspired air. Infant size mask should be used on a stoma.
3. **Mask and Bag.**
   a. Gas inflow must be set at whatever level will prevent complete collapse of the bag.
   b. Oxygen concentration in excess of 60% in inspired air can be obtained with this system.
4. **Venturi Masks.** They are designed to deliver specific concentrations of inspired oxygen of either 24, 28, 35 or 40%.

Ten-Minute Break
(0:50) 0:10

Equipment for Ventilation and Oxygen Delivery
(1:00) 0:30

1. **Pocket-Mask With Oxygen Inlet Valve System.**
   a. **Purpose**
      1) This is a ventilation system which permits additional oxygen to be delivered to the non-breathing patient.
      2) Ten liters of oxygen per minute will provide the patient with approximately 50% oxygen; 15 liters per minute, with approximately 80% oxygen.
   b. **Use**
      1) Stand behind patient's head and open airway with modified jaw thrust, use oropharyngeal airway.
      2) Attach oxygen.
      3) Apply mask to the face with the apex over the bridge of the nose and the base between the lips and chin.
      4) Place thumbs on dome of mask and hold patient's mandible with remaining fingers.
      5) Maintain an airtight seal with firm pressure between thumb and fingers.
      6) Maintain an open airway by modified jaw thrust.
      7) Breathe through open port in chimney.
      8) Remove mask and allow patient to exhale passively.
      Note: Adult mask may be inverted for use on a child. Infant size mask can be used on the stoma.
2. **Bag-Valve-Mask Resuscitator**
   a. **Purpose**
      1) This system when used with a reservoir permits delivery of high concentrations of oxygen to the patient.
      2) It should be used with an oropharyngeal airway in place.
   b. **Design Requirements**
      1) The bag should be self-refilling without sponge rubber.
      2) It should contain a non-jam valve system calibrated at 15 liters per minute oxygen-inlet flow, which cannot be incorrectly reassembled.
      3) The face mask should be transparent plastic with an air-filled or contoured resilient cuff.
      4) It should contain a no-pop-off valve except for pediatric models.

Instructor's Notes

Display equipment and demonstrate use on manikin. Describe aseptic procedures.

Display equipment and demonstrate use on a manikin. Describe aseptic procedures.

Display equipment and demonstrate use on manikin. Describe aseptic procedures.

Display equipment and demonstrate use on a manikin. Describe aseptic procedures.

Display equipment, describe design requirements and demonstrate use on a manikin. Describe aseptic procedures.

7?

Time (Elapsed) Actual	Contents

5) Fittings should be standard 15 mm/22 mm.
6) The valve should be non-rebreathing.
7) It should have an ancillary oxygen inlet.
8) It should operate in cold weather.
9) Reservoir must be available.

c. **Use**

1) Select correct mask size.
2) Inflate collar if necessary.
3) Open airway with cross-finger technique and insert oropharyngeal airway.
4) Apply mask over the patient's face with its apex over the bridge of the nose and its base between the lower lip and chin.
5) Hold the mask firmly in position by placing three fingers of one hand on the mandible between the angle and the lobe of the ear while the index finger is held over the lower portion of the mask and the thumb over the upper portion of the mask.
6) With the other hand, compress the bag fully in a rhythmical manner once every five seconds.

d. **Comments on Use**

1) Better volumes for ventilation can be delivered by direct mouth-to-mouth resuscitation but supplemental oxygen cannot be provided.
2) Better volumes for ventilation can be delivered by the mouth-to-mask system but the latter delivers only up to 80% oxygen.
3) Inadequate tidal volume may be the result of improper seal or incomplete bag compression.
4) If chest does not rise and color improve in a non-breathing patient, select an alternate method.

3. **Demand-Valve Resuscitator**

a. **Purpose**

1) This system can be used to assist ventilation or control it.
2) It can deliver 100% oxygen.

b. **Design Requirements**

1) Valve can open in response to patient's inspiratory effort or by manual control of EMT-A.
2) Demand-valve units in ambulances must be equipped with manual control.
3) Valves will operate effectively in a supply-pressure range of 40 to 80 psi.

c. **Use**

1) Present pressure initially at 10 to 20 cm H_2O or 8 to 15 mm Hg. Increase as necessary during use.
2) Apply mask. Assure an airtight fit between patient's face and mask.
3) Ventilate patient by periodically depressing valve button. Monitor manual control at all times.

Practice (Groups of No More Than 6 Students Per Manikin)

(1:30) 1:15

1. Each student should practice the following skills on adult and infant manikins.

a. Inserting oropharyngeal airways.
b. Inserting nasopharyngeal airways.
c. Setting up, using and closing down suction devices.
d. Setting up, administering and closing down oxygen equipment. Administration should be by all available equipment, that is, nasal cannula, face mask, mask and bag and/or venturi mask.

Instructor's Notes

Display equipment, describe design requirements and demonstrate use on a manikin. Describe aseptic procedures.

Discuss the problems with excess esophageal opening pressure and gastric distention.

Divide class into groups of 6. Monitor and critique each student. Permit students to practice until they can perform each step without error.

Provide a 10-minute break during the practice session.

Time (Elapsed) Actual	Contents
	2. Each student should perform on an adult manikin one and two-man CPR and simultaneous administration of oxygen using the pocket mask with oxygen inlet valve and the bag-valve-mask resuscitator. **Note:** All students not working directly with the equipment should watch students who are and should attend to the instructor's critique. **Note:** The instructor should use the practice period not only for perfection of skills but also for emphasis of all lesson coverage required for students to achieve the lesson objectives.
Summary and Questions (2:45) 0:15	1. Class questions or comments on the topic of the lesson. 2. Demonstration by selected class members of achievement of lesson objectives.
(3:00)	

Instructor's Notes

Question class members on selected objectives.

Lesson 7
Bleeding and Shock

Objectives

At the conclusion of Lesson 7, the instructor will have provided sufficient information, demonstration, and practice to the student, to ensure his/her ability to:

- List four methods of controlling bleeding.
- Demonstrate control of external bleeding by use of direct pressure, elevation and pressure points.
- Describe when and how to use a tourniquet.
- List four signs of internal bleeding.
- List six types of shock.
- List six signs and/or symptoms of shock.
- Demonstrate and describe five steps in the treatment and prevention of shock.
- Perform a primary survey.
- Perform a secondary survey.
- Obtain and record a blood pressure by both auscultation and palpation.

Requirements

Equipment: (one for each student) unless otherwise noted.

- Stethescope and Sphygmomanometer (one for each six students).
- 4 × 4 gauze pads.
- Universal dressings.
- Roller bandages.
- Self-adherent bandages.
- Occlusive dressing.
- Triangular bandage.
- Adhesive tape.
- Tourniquet.
- Bandage scissors.
- Blanket (one for each two students).
- Pillow (one for each two students).
- Chalkboard.
- 35mm projector.
- Movie screen.

Illustrations:

- Chart/Transparency showing:
  —types of shock
  —signs and symptoms of shock
  —treatment of shock
  —check list, conduct primary and secondary survey

Visual Aids:

- 35mm slides AAOS or similar

Instructors:

- A physician knowledgeable in all areas of subject matter covered in this lesson.
- One for each six students during practice.

Instructor Preparation/ Tasks

The Instructor Should:

- Review the lesson outline to assure understanding of contents and procedures.
- Review and preview all references and visual aids selected for the lesson by the course administrator.
- Select and prepare appropriate instructional aids in addition to those provided by the course administrator; if desired.
- Provide the student with a clear understanding of the rationale and procedures involved in the control of bleeding and shock.
- Provide the student with ample practical experience in methods of bleeding control and shock prevention.
- Provide the student with ample practical experience in techniques of performing primary and secondary surveys as a programmed patient.
- Brief all instructor aides as to their roles and responsibilities during the lesson.

Time (Elapsed) Actual | **Contents**

Administrative Matters
(--) 0:05

1. Student attendance.
2. Announcements, etc.

Introduction
(0:05) 0:05

1. **Lesson Coverage**
   a. The design of the circulatory system.
   b. Technique of determining blood pressure.
   c. Signs and meaning of shock and techniques for controlling bleeding.
   d. Signs of external and internal bleeding and techniques for controlling bleeding.
   e. Performing an examination for life-threatening problems.
   f. Additional practice on airway care, pulmonary resuscitation and cardiopulmonary resuscitation, as needed.
2. **Need for Lesson**
   a. Severe bleeding and shock are life-threatening emergencies. Performing a patient survey for life-threatening problems will be the EMT-A's first responsibility at the accident scene.
   b. Students will be evaluated on knowledge and skills in the next lesson. The practice session for this lesson will therefore provide an opportunity for all students to practice skills learned thus far in the course in order that they may be prepared for the practice, test and evaluation session.
3. **Lesson Objectives.** At the end of the lesson, each student will be able to:
   a. List four methods of controlling external bleeding.
   b. Demonstrate control of external bleeding by use of direct pressure, elevation and pressure points.
   c. Describe when and how to use a tourniquet.
   d. List four signs of internal bleeding.
   e. List six types of shock.
   f. List six signs and/or symptoms of shock.
   g. Demonstrate and describe five steps in the treatment and prevention of shock.
   h. Perform a primary survey.
   i. Perform a secondary survey.
   j. Obtain and record a blood pressure by both auscultation and palpation.

Mechanics of Circulation
(0:10) 0:15

1. **System Elements and Functions**
   a. **Heart.** The heart is a hollow muscular organ.
      1) The left part of the heart receives oxygenated blood from the lungs and pumps it to all body parts.
      2) The right part of the heart receives blood from all body parts and pumps it to the lungs to be reoxygenated.
   b. **Arteries.** Arteries carry freshly oxygenated blood to the body. The aorta is the major artery leaving the left side of the heart.
   c. **Capillaries.** Each artery divides into smaller and smaller branches and finally forms capillaries. Through the very thin capillary walls, oxygen, carbon dioxide and other substances are exchanged between body cells and the circulatory system.
   d. **Veins.** Veins collect deoxygenated blood from the capillaries and carry it back to the heart.
2. **Pulse.** Each time the heart pumps, a pulse can be felt throughout the arterial system. The pulse can be felt in any area where an artery passes over a bony prominence or lies close to the skin. It can most easily be felt where a large artery is close to the skin surface, that is:
   a. The radial pulse.

Instructor's Notes

If new instructor, introduce self and instructor aides.

Review lesson coverage and objectives. Emphasize criticality of skills and knowledge covered.

Emphasize importance of the practice session.

Refer to lesson objectives in the Student Study Guide and review with class.

Refer to illustration of design of heart circulatory system.

Demonstrate location of pulses and have each class member find his own pulses and those of a neighbor.

b. The carotid pulse.

c. The femoral pulse.

d. The brachial pulse (infants).

3. **Blood**

a. **Composition.** Blood is a red, sticky fluid that travels through the circulatory system. The average adult has six liters of blood.

b. **Functions**

1) Blood carries oxygen to body tissues and removes waste products.

2) It carries cells that combat infection in the body.

3) It has the capability of clotting; clotting normally takes 6 to 7 minutes.

c. **Perfusion**

1) The term perfusion means the circulation of blood within an organ. An organ is perfused if blood is entering it through the arteries and leaving through the veins.

2) Perfusion keeps the body cells healthy by providing them with oxygen and other nutrients and removing waste products.

4. **Blood Pressure**

a. **Definition**

1) Blood pressure is the pressure that the blood exerts against the walls of the arteries as it passes through them. This pressure causes the flow of blood.

2) The pressure wave has high and low points, call systolic pressure and diastolic pressure.

3) They can be measured by a sphygmomanometer and are expressed numerically in millimeters of mercury.

4) In normal males, systolic pressure varies from 100 mm Hg plus the age of the patient up to 140 mm Hg; diastolic pressure, from 65 to 90 mm Hg. In females, the pressure may be 8 to 10 mm Hg lower.

5) Abnormally high blood pressure may result in rupture of the arteries. Abnormally low blood pressure means that there is insufficient pressure in the system to supply blood to all organs of the body and some of these organs may die.

6) It is important for a physician to know the patient's blood pressure as soon as possible after an emergency event in order for him to evaluate the significance of any change in blood pressure measured at the hospital.

b. **Measurement.** Blood pressure is measured with a sphygmomanometer. Procedures are:

1) Fasten cuff of sphygmomanometer about either arm above the elbow and inflate with the rubber bulb until the mercury column or the needle of the dial stops moving with the pulse (usually between 150 and 200 mm Hg).

2) Ausculatory method.

a) Place the stethoscope diaphragm or bell over the brachial artery; earpieces should point forward.

b) Release air slowly from the bulb and observe the mercury column fall or aneroid dial return to zero.

c) Record as the systolic pressure the point on the gauge at which the sound of the pulse is first heard.

d) Record as the diastolic pressure the level on the gauge at which the sounds disappear.

3) Palpation method.

a) Release air slowly from the bulb and observe the mercury.

b) Record the systolic pressure when the pulse is first felt in brachial or radial artery.

Instructor's Notes

Explain how perfusion keeps body cells healthy.

Draw pressure wave on chalkboard.

Display equipment and demonstrate technique on a student. Explain that cuff should be snug.

Have each student locate his own brachial artery and that of his neighbor.

Demonstrate obtaining systolic reading by palpation.

88

Time
(Elapsed)
Actual

Contents

Shock
(0:25) 0:35

1. **Meaning.** Shock is the failure of the circulatory system to provide sufficient oxygenated red cells to perfuse cellular tissue.
2. **Causes.** Shock is caused by:
   a. Failure of the heart to pump sufficient blood.
   b. Severe blood or fluid loss so that there is insufficient blood for the heart to pump through the system.
   c. Enlargement of blood vessels so that there is insufficient blood to fill them.
   d. Breathing problems resulting in insufficient oxygen traveling through the system.
3. **Result.** Result is the same in all cases—there is inadequate perfusion of the cells—oxygenated blood.
4. **Types**
   a. **Hypovolemic Shock (Blood Loss)—**There is insufficient blood in the system to provide adequate circulation to all body organs. Causes hemorrhage and dehydration.
   b. **Respiratory Shock (Inadequate Breathing)**—There is an insufficient amount of oxygen in the blood.
   c. **Neurogenic Shock (Loss of Vascular Control by the Nervous System)—** Enlargement of the vascular container so that there is insufficient blood to fill it.
   d. **Psychogenic Shock (Fainting)—**Temporary dilation of the blood vessels results in decreased blood supply to the brain.
   e. **Cardiogenic Shock (Inadequate Functioning of the Heart)—**The heart muscle no longer imparts sufficient pressure to the blood to drive it through the system.
   f. **Septic Shock (Severe Infection)—**Bacteria attack small blood vessel walls so that they dilate.
   g. **Anaphylactic Shock (Allergic Reaction)—**This is a severe allergic reaction caused by foods, drugs, insect stings, and inhaled substances. It can occur in minutes or even seconds following contact with the substance to which the patient is allergic.
   h. **Metabolic Shock (Bodily Loss of Fluid)—**A severe fluid loss occurs from a severe untreated illness.
5. **Signs and Symptoms**
   a. Restlessness and anxiety (these signs may precede all others).
   b. Weak and rapid (thready) pulse.
   c. Cold and clammy skin.
   d. Diaphoresis.
   e. Pale or mottled face.
   f. Breathing shallow, labored, rapid, possible irregular or gasping.
   g. Eyes dull or lusterless with dilated pupils.
   h. Marked thirst.
   i. Possible nausea or vomiting.
   j. Gradual and steady drop in blood pressure.
   k. Possible fainting in cases of rapidly developing transient shock.
   l. Decreased capillary refill.
6. **Signs and Symptoms-Anaphylactic Shock**
   a. The skin may burn, flush, itch or break out. The face and tongue may swell. Cyanosis may be visible around the lips.
   b. Breathing is difficult. There is a tightness or pain in the chest and persistent coughing.
   c. Blood pressure drops and the pulse becomes weak or imperceptible.

Instructor's Notes

Describe susceptibility of different organs to lack of perfusion.

A pertinent example is the use of the terms container, pump and fluid, e.g., closed pump system.

List types on chalkboard as they are mentioned. Give examples of causes of each type.

Refer to illustration of face of patient in shock.

d. Faintness and coma may ensue.

7. **Emergency Care.** Certain principles of initial treatment may be applied to all patients in shock.
   - a. Secure a clear airway and administer a high percent of oxygen.
   - b. Control bleeding.
   - c. Elevate lower extremities if injuries to them do not make this inadvisable.
   - d. Splint fractures.
   - e. Avoid rough handling.
   - f. Prevent LOSS of body heat.
   - g. Keep the patient supine unless he is personally more comfortable in another position.
   - h. Record blood pressure, pulse and other vital signs at 5-minute intervals.
   - i. Do not feed the patient or give him anything to drink.

NOTE: The basic care for shock is to care for the whole patient to PREVENT shock.

NOTE: The only definitive treatment for anaphylatic shock is an injection to combat the agent causing the reaction. The patient may need to be stabilized with high percent oxygen. The patient needs prompt transportation to a medical facility. The EMT may ASSIST an individual in administering medication (epinephrine) if allowed by State and local protocol.

External Bleeding
(1:00) 0:15

1. **Seriousness**
   - a. The loss of 1 liter of blood in an adult is serious and of 500 ml (1/2 liter) of blood in a child is serious, as is 20% of blood volume in an infant.
   - b. The body has a natural mechanism of defense against bleeding, that is, clotting. If damage is severe, however, clots physically cannot occlude the damaged blood vessels.
   - c. If uncontrolled, bleeding can result in shock and death.
2. **Types**
   - a. **Arterial.** Bleeding from an artery spurts and is bright red in color because it is rich in oxygen.
   - b. **Venous.** Bleeding from a vein is steady and is dark bluish-red in color.
   - c. **Capillary.** Blood oozes from a capillary and is similar in color to venous blood.
3. **Control of Bleeding**
   - a. **Direct Pressure**
     - 1) Direct pressure with the hand over the wound using a universal dressing or gauze pad will stop most bleeding.
     - 2) The dressing should be held in place with a bandage.
     - 3) If the bleeding does not stop, additional pressure should be applied with the hand.
     - 4) Elevation may help control bleeding of an extremity.
     - 5) Large wounds require packaging with gauze.
   - b. **Pressure Points.** If pressure dressings are not available, pressure points may be used to control severe bleeding in the arm or leg.
     - 1) The brachial artery is pressed against the bone to stop bleeding below the pressure point.
     - 2) The femoral artery is pressed against the pelvis to stop bleeding in the leg.
   - c. **Tourniquet**
     - 1) **Use.** A tourniquet is used in a severe emergency when other means will not stop bleeding in an extremity.

Instructor's Notes

Relate the type of care to the type of shock.

Check procedures and protocols on this issue.

Describe uses, advantages and disadvantages of each type. Demonstrate on a student.

Explain that pressure points should be used only if direct pressure fails. Have each student demonstrate on another student.

2) **Dangers.** Tourniquets can damage nerves and blood vessels and result in the loss of an arm or leg.

3) **Procedures.** If a tourniquet must be used:

a) Use a bandage 3 to 4 inches wide and 6 to 8 layers deep.

b) Wrap it around the extremity twice and tie a half knot.

c) Place a stick on top of the knot and complete tying a square knot.

d) Twist the stick until the bleeding stops, and tie it in position.

e) Mark TK on the patient's forehead and be sure to notify other emergency personnel who take charge of the patient that a tourniquet has been applied.

d. **Splints**

1) When a fracture is present, much damage is caused to tissues by broken bones.

2) Splinting may allow prompt control of bleeding associated with the injury.

e. **Pressure Pants and Splints**

1) Pressure splints and pants can aid markedly in controlling severe hemorrhage when massive lacerations of muscle and tissue and multiple fractures have occurred.

2) Pressure pants can also aid in shock control.

4. **Nosebleeds** (epistaxis)

a. **Seriousness.** Nosebleeds can be serious enough to cause shock from blood loss.

b. **Causes**

1) Fractured skull.

2) Facial injuries.

3) Sinusitis, infections, abnormalities of the inside of the nose.

4) High blood pressure.

5) Bleeding diseases.

6) Digital trauma to the nasal airway.

c. **Emergency Care.** Procedures are:

1) Pinch the nostrils or place a bandage between the upper lip and the gum, and press.

2) Keep patient in sitting position.

3) Keep patient quiet.

4) If available, apply ice over the nose.

5) **Caution.** Bleeding from the nose or ears may mean there is a skull fracture. This type of bleeding should not be stopped.

Internal Bleeding
(1:15) 0:10

1. **Seriousness**

a. Internal bleeding can result in severe blood loss and the patient may die of shock.

b. As an example, a fractured shaft of the femur can result in an internal loss of 1 liter of blood.

c. Laceration of the liver can result in severe blood loss and be quickly fatal.

2. **Signs**

a. The signs of internal bleeding are those of hypovolemic shock.

b. In addition, the patient may cough up or vomit bright red blood, vomit dark blood (the color of coffee grounds), pass dark stools, pass bright red blood, or have a tender, rigid abdomen that enlarges.

3. **Emergency Care**

a. The patient suffering from severe internal bleeding is in serious condition and the rescuer can do very little for him at the accident scene.

Instructor's Notes

Explain damages that can result from use of improper use of tourniquets. Demonstrate on a student.

BP cuff may be useful in the unlikely event that a tourniquet is required.

Explain reasons for the techniques of care.

Give reason.

Ask class to identify signs of shock.

Identify injuries associated with each sign.

Time (Elapsed) Actual	Contents

b. If bleeding is suspected in an extremity, it may be controlled by a pressure dressing or by application of a splint.

c. Fast but safe transportation to a hospital is a must.

d. A high percentage of oxygen should be administered.

e. Military Anti-Shock Trousers (MAST) or Pneumatic Counter Pressure Devices may be useful.

Review of Primary Patient Survey
(1:25) 0:15

1. **Stages.** At the emergency care scene, patient examination must be performed. It is performed in two stages:
   a. Checking for and controlling life-threatening problems—the primary survey.
   b. Checking for and stabilizing injuries not threatening to life—the secondary survey.
2. **Primary Patient Survey.** The procedures for the life-threatening survey are accomplished simultaneously, not sequentially. The EMT-A will feel, talk and observe.

NOTE: The EMT-A should always check for medical identification symbols.

a. **Level of Consciousness**
   1) Establish responsiveness.
   2) Determine orientation.

b. **Respirations**
   1) Observe chest and feel for exhaled air at mouth and nose.
   2) Assess rate, quantity, quality.
   3) Don't forget the special case of the laryngectomee.

c. **Pulse**
   1) Establish existence.
   2) Assess rate and quality.

d. **Bleeding/Shock**
   1) Observe for life-threatening external bleeding.
   2) Observe for indications of internal bleeding.

NOTE: If there are multiple casualties, check each patient, stopping only to administer to those with life-threatening problems.

Practice (Groups of No More Than 6 Students Per Manikin or Item of Equipment)
(1:40) 1:05

1. Each student should practice taking blood pressure of other students using the following steps:
   a. Fastening and inflating the cuff.
   b. Placing the diaphragm or bell over the brachial artery.
   c. Releasing air and recording systolic and diastolic pressures.

NOTE: The student should also measure systolic pressure by palpation.

2. Each student should practice applying a tourniquet on a fellow student.
3. Each student should perform an examination of a fellow student for life-threatening problems. He should describe what he is doing, implications of his finding and actions to be taken. The instructor should provide any needed information. The student's performance should include:
   a. Checking for state of consciousness.
   b. Checking respirations.
   c. Checking pulse.
   d. Checking for life-threatening bleeding and shock.
4. Each student should practice AS NEEDED the following skills (taught in Lessons 2, 3, and 4):
   a. Opening the airway of patients with and without spine injuries.
   b. Dislodging foreign objects from the airway by blows and by manual thrusts.

Instructor's Notes

Demonstrate procedures on a student. Explain what you are doing, implications of what you find and actions you would take. Stress importance of asking witnesses for information.

Discuss implications.

Discuss implications.

Divide class into groups of 6. Provide a 10-minute break during the practice session.

Monitor and critique each student. Permit students to practice until they can perform the skill without error. Do not prevent circulation in the extremity.

Programmed patient situations are recommended here.

Permit students to practice skills THEY FEEL THEY NEED to practice.

Monitor and critique on an as-needed basis.

Time (Elapsed) Actual	Contents

c. Performing pulmonary resuscitation on an adult and infant manikin.

d. Performing one-man cardiopulmonary resuscitation on an adult manikin for both a witnessed and unwitnessed cardiac arrest.

e. Performing two-man cardiopulmonary resuscitation, including changing positions during resuscitation.

f. Performing cardiopulmonary resuscitation while manikin is being transported on a stretcher.

g. Performing cardiopulmonary resuscitation on an infant manikin.

h. Using the following equipment (including setting up and closing down equipment as appropriate):

  1) Oropharyngeal airways.
  2) Nasopharyngeal airways.
  3) Portable Suction unit.
  4) Oxygen (cylinder, pressure regulator, flowmeter, humidifier).
  5) Oxygen delivery system-nasal cannula, face masks, mask and bag, and/or venturi mask.
  6) Pocket mask with oxygen inlet valve.
  7) Bag-valve-mask resuscitator with and without oxygen.

NOTE: The instructor should use the practice period not only for perfection of skills but also for emphasis of all lesson coverage required for students to achieve the lesson objectives.

Summary and Questions
(2:45) 0:15

1. Class questions or comments on the topic of the lesson.
2. Demonstration by selected class members of achievement of lesson objectives.
3. Reminder that the next lesson is a practice, test and evaluation lesson.

(3:00)

Question class members on selected objectives.

Lesson 8 Test and Evaluation: Airway Care, Pulmonary Arrest, Cardiac Arrest, Bleeding and Shock

Objectives

At the conclusion of Lesson 8, the instructor will have provided sufficient information, demonstration, and practice to the student, to ensure his/her ability to:

—Pass a written test which evaluates knowledge objectives specified for Lessons 1 through 7.

—Pass a practical test to evaluate skill objectives with a minimum score of 70%.

NOTE: Objectives contained within 3, 4, and 5 may be minimized as they should have been previously evaluated, however, a review of select material is recommended.

Requirements

Material: (one for each student)

—Written examination covering materials from Lesson 1 through 7.

—Checklist for all skill areas included in practical evaluation.

Equipment: (number of pieces of equipment are for a class of 25; if more or less, prorate accordingly)

- Penlight—5
- Stethoscope—5
- Sphygmomanometer—5
- Thermometer—5
- Oropharyngeal airways—5
- Nasopharyngeal airways—5
- Portable suction units—2
- 4 × 4 gauze pads—100
- Universal dressings—25
- Roller bandages—25
- Adhesive tapes—10 rolls (2")
- Tourniquets—5
- Bandage scissors—5
- Chalkboard—1
- Oxygen equipment and delivery system—2
- Bag-valve-mask system—5
- Pocket mask/oxygen inlet valve—5
- Venturi mask—5
- Demand-valve resuscitator—2
- Appropriate quantities of lubricant jelly and gauze pads for ALL equipment.
- Self adherent bandage—5
- Occlusive dressings—5
- Triangular bandages—5
- Blankets—5
- Pillow—5
- Manikins
- Makeup and moulage

Instructors:

—One certified EMT or EMT-P for each five students.

—If programmed patients are used, additional EMT's should be used for patients.

Instructor Preparation/ Tasks

The Instructor Should:

- Review the lesson outline to assure understanding of contents and procedures.
- Be familiar with all visual aids and other equipment to be demonstrated during the lesson.
- Provide the student with a fair evaluation of the knowledge gained in Lessons 1 through 7, be presenting and monitoring a written examination on this material.
- Provide the student with a fair skills evaluation by presenting a practical skills examination covering proficiencies gained in Lessons 1 through 7.
- Brief all instructor aides as to their roles and responsibilities during the lesson.
- Prepare programmed patients.

Evaluation of Knowledge Objectives

It is assumed that instructors for individual lessons will assist the course coordinator in developing written test items for the lessons they teach. It will be the responsibility of the course coordinator to assemble a balanced test that is directed toward assessing whether or not the knowledge objectives of Lessons 1 through 7 have been achieved.

The instructor for the first part of this lesson serves largely as a monitor of the test itself. He should assure that he has sufficient copies of the test for each student and should review all procedures for completing the test so that he can explain these procedures correctly to the students.

Evaluation of Skill Objectives

In order to assure that all students are evaluated in the same manner, the instructor should have a checklist on which he can check off the principal features of the skill to be evaluated. This checklist essentially comprises the student's evaluation sheet. It is assumed that the checklist will be prepared by the instructor and course coordinator. To aid in designing checklists, the lesson plan identifies certain features of each skill. They may be refined into a list of steps. The resultant steps may not be all of equal weight in skill evaluation. The primary purpose of the checklist is to aid instructors in STANDARDIZING their evaluations of student performance. All instructors must be briefed on checklist use.

Detailed procedures for the evaluation session are not specified since they will vary depending on the number of students in the class, the number of instructors and the amount of equipment available. It is suggested that instructors divide among themselves the skills to be evaluated. In effect, the lead instructor should set up test stations. He should also assure that all equipment and materials required for the lesson are available.

All instructors should be thoroughly briefed on their responsibilities. Each instructor should review the lesson plans and references for Lessons 1 and 7 so that they are thoroughly knowledgeable about their contents.

Time (Elapsed) Actual — **Contents**

Administrative Matters
(--) 0:05

1. Student attendance.
2. Announcements, etc.

Evaluation of Knowledge Objectives
(0:05) 0:30

1. Student completion of written test designed to evaluate attainment of knowledge objectives specified for Lessons 1 through 7.

Ten-Minute Break
(0:35) 0:10

Evaluation of Skill Objectives
(0:45) 2:15

1. **Evaluation.** The instructor should use a checklist to evaluate student proficiency in performing the following skills:

   a. **Airway Care and Pulmonary Resuscitation—Adults.** Working on an adult resuscitation manikin, each student should demonstrate proficiency in airway care and resuscitation for patients with and without suspected spine injuries.

   b. **Airway Care and Pulmonary Resuscitation—Infants.** Working on an infant resuscitation manikin, each student should demonstrate proficiency in airway care and resuscitation.

   c. **Bag-Valve-Mask Technique of Pulmonary Resuscitation.** Working on a resuscitation manikin, each student should demonstrate proficiency in ventilation with the bag-valve-mask resuscitator. Performance should include:
      1) Selecting correct mask size.
      2) Inflating collar if necessary.
      3) Opening the airway.
      4) Applying the mask—obtaining a tight seal.
      5) Ventilating the lungs.
      6) Maintaining ventilation at proper rate.

   g. **Airways.** Working on an adult intubation manikin, each student should demonstrate proficiency in inserting oropharyngeal and nasopharyngeal airways. Performance should include:
      1) **Oropharyngeal Airway**
         a) Opening mouth using cross-finger technique.
         b) Inserting airway with tip facing upward.
         c) Rotating airway 180 degrees when halfway in.
         d) Completing insertion of rotated airway.
      2) **Nasopharyngeal Airway**
         a) Lubricating the airway.
         b) Inserting the airway.

   h. **Suction Equipment.** Working on a manikin, instructor or fellow student, each student should demonstrate proficiency in using suction equipment. Performance should include:
      1) Switching on suction.
      2) Clamping tubing.
      3) Checking pressure dial.
      4) Attaching catheter or tonsil sucker.
      5) Opening the mouth using the cross-finger technique.
      6) Inserting catheter or tonsil sucker.
      7) Applying suction.
      8) Cleaning equipment during use.
      9) Closing down equipment.

Distribute test. Explain procedures for taking the test. Collect completed papers.

Explain procedures to be followed in the evaluation session.

Follow latest Heart Association procedures.

It is suggested that one or more skills tested in Lesson 5 be randomly selected, e.g., adult unconscious obstructed airway but that all skills need not be re-evaluated at this time.

See previous note.

103

i. **Oxygen Equipment.** Working on a manikin, instructor or fellow student, each student should demonstrate proficiency in using oxygen equipment. Performance should include:

1) Removing the protective cap.
2) "Cracking" the valve.
3) Attaching the regulator-flowmeter.
4) Attaching the humidifier as appropriate.
5) Reducing the pressure.
6) Regulating the flow.
7) Connecting the administering apparatus.
8) Administering oxygen.
9) Shutting down the equipment.

j. **Blood Pressure.** Working on an instructor or fellow student, each student should demonstrate proficiency in taking blood pressure. Performance should include:

1) Fastening and inflating the cuff.
2) Placing the diaphragm or bell over the brachial artery.
3) Releasing air and recording systolic and diastolic pressures.

NOTE: The student should also measure systolic pressure by palpation.

k. **Tourniquet.** Working on an instructor or fellow student, each student should demonstrate proficiency in applying a tourniquet to an extremity. Performance should include:

1) Selecting and folding an appropriate bandage.
2) Wrapping the bandage around the extremity twice and tying a half knot.
3) Placing a stick in the knot and tying a square knot.
4) Twisting the stick and tying it in position.
5) Marking the patient.

l. **Primary and Secondary Patient Survey.** Working on an instructor or fellow student, each student should demonstrate performing an examination for life-threatening and non-life-threatening problems. The instructor should provide any information needed. Performance should include:

1) Checking for state of consciousness.
2) Checking respirations.
3) Checking pulse.
4) Checking for life-threatening bleeding and shock—including descriptions of all appropriate signs.
5) Completing a head-to-toe survey.
6) Completing an interview.
7) Taking and recording vital signs.

(3:00)

Do not prevent circulation in the extremity.

Lesson 9
Review of Shock and Introduction to the Practical Application of Military Anti-Shock Trousers (MAST) or Pneumatic Counter Pressure Devices (PCPD)

Objectives

At the conclusion of Lesson 9, the instructor will have provided sufficient information, demonstration, and practice to the student to ensure his/her ability to:

- The student will be able to list six signs/symptoms of shock.
- The student will be able to list the indications for Military Anti-Shock Trousers (MAST) or Pneumatic Counter Pressure Device application inflation.
- The student will be able to list the contraindication(s) for Military Anti-Shock Trousers (MAST) or Pneumatic Counter Pressure Device application.
- Given the Pneumatic Counter Pressure Device, a patient or manikin in the supine position, and a fellow student as an assistant, the student will be able to demonstrate the procedure for the application and inflation of the PCPD.
- Identify breath sounds, particularly rales, as a contraindication for PCPD application if chest auscultation is required by State/local protocol.

Requirements

Material: (one for each student)

- Pneumatic Counter Pressure Device (one for each six students).
- Stethoscope and sphygmomanometer (one for each six students)
- 35mm projector
- 16mm projector
- Movie screen
- Chalkboard

Illustrations:

—Chart showing indications for Pneumatic Counter Pressure Device (MAST) application.

—Chart showing contra-indications for Pneumatic Counter Pressure Device (MAST) application.

Visual Aids:

—35mm slides AAOS or similar.

—16mm film: showing the correct Pneumatic Counter Pressure Devices application procedures.

Instructors:

- One from State EMS Office, or assignee to provide lecture standardization.
- One for each six students during practice session. EMT-P or EMT-A with Pneumatic Counter Pressure Devices training.

Instructor Preparation/Tasks

The Instructor Should:

- Review the lesson outline to assure understanding of contents and procedures.
- Review and preview all references and visual aids selected for the lesson by the course administrator.
- Select and prepare appropriate instructional aids in addition to those provided by the course administrator; if desired.
- Be familiar with all visual aids and other equipment to be demonstrated during the lesson.
- Provide the student with a clear understanding as to the indications and contraindications for PCPD and procedures for their application.
- Provide the student with ample practical experience to ensure his/her competency in applying the PCPD.
- Brief all instructor aides as to their roles and responsibilities during the lesson.
- Review State/local protocols concerning the application of PCPD by basic EMT's.

Time (Elapsed) Actual | **Contents**

Administrative Matters
(--) 0:05

1. Student attendance.
2. Announcements, etc.

Review of Previous Lesson
(0:05) 0:20

1. Written test—correct answers and common errors made in the written test administered in the previous lesson.
2. Practical examination—overall class performance and common errors made in demonstration of skills in the previous lesson.

Introduction
(0:25) 0:05

1. **Lesson Coverage**
   a. This lesson provides a review of the signs, symptoms, types and care for shock.
   b. It also introduces the student to the Pneumatic Counter Pressure Device (MAST) as a method of preventing or correcting shock by the translocation of blood from the lower extremities.
2. **Need For Lesson.** Shock can be fatal if unrecognized or untreated.
3. **Lesson Objectives.**
   a. List six signs/symptoms of shock.
   b. List the contraindications for Pneumatic Counter Pressure Device (MAST) application.
   c. List the indications for Pneumatic Counter Pressure Device (MAST) application and inflation.
   d. Given the Pneumatic Counter Pressure Device, a patient or manikin in the supine position, and a fellow student as an assistant, the student will be able to demonstrate application and inflation of the garment.

Shock
(0:30) 0:20

1. **Meaning.** Shock is a failure of the circulatory system to provide sufficient circulation to every body part. Cellular perfusion fails.
2. **Causes.** Shock is caused by:
   a. Failure of the heart to pump sufficient blood.
   b. Severe blood or fluid loss so that there is insufficient blood traveling through the system.
   c. Enlargement of blood vessels so that there is insufficient blood to fill them.
   d. Breathing problems resulting in insufficient oxygen traveling through the system.
3. **Result.** Result is the same in all cases—all normal bodily processes are affected.
4. **Types**
   a. **Hypovolemic Shock (Blood Loss)**—There is insufficient blood in the system to provide adequate circulation to all body organs.
   b. **Respiratory Shock (Inadequate Breathing)**—there is an insufficient amount of oxygen in the blood.
   c. **Neurogenic Shock (Loss of Vascular Control by the Nervous System)**—blood vessels dilate and there is insufficient blood to fill them.
   d. **Psychogenic Shock (Fainting)**—temporary dilation of the blood vessels results in decreased blood supply to the brain.
   e. **Cardiogenic Shock (Inadequate Functioning of the Heart)**—the heart muscle no longer imparts sufficient pressure to the blood to drive it through the system.
   f. **Septic Shock (Severe Infection)**—bacteria attack small blood vessel walls so that they dilate and plasma and can no longer constrict.
   g. **Anaphylactic Shock (Allergic Reaction)**—this is a severe allergic reaction caused by foods, drugs, insect stings and inhaled substances. It can occur in minutes or even seconds following contact with the substance to which the patient is allergic.
   h. **Metabolic Shock (Bodily Loss of Fluid)**—a severe fluid loss occurs from a severe untreated illness.

Instructor's Notes

Note: The review part of the lesson should be conducted by an individual knowledgeable about the previous practice, test and evaluation session.

Distribute student tests. Review test pointing out correct answers and discussing common errors. Review overall performance and discuss types of errors made by class members. Review lesson coverage and objectives. Emphasize criticality of skills and knowledge covered.

Refer to lesson objectives in the Student Study Guide and review with class.

Describe susceptibility of different organs to lack of perfusion. Since this is a review of a previous lesson questions should be asked to stimulate discussion.

List types on chalkboard as they are mentioned by the student.

Time (Elapsed) Actual | **Contents**

5. **Signs and Symptoms**
    - a. Restlessness and anxiety (these signs may precede all others).
    - b. Weak and rapid (thready) pulse.
    - c. Cold and clammy skin.
    - d. Profuse sweating.
    - e. Pale or cyanotic face.
    - f. Breathing shallow, labored, rapid, possibly irregular or gasping.
    - g. Eyes dull or lusterless with dilated pupils.
    - h. Marked thirst.
    - i. Possible nausea or vomiting.
    - j. Gradual and steady drop in blood pressure.
    - k. Possible fainting in cases of rapidly developing transient shock.

6. **Signs and Symptoms—Anaphylactic Shock**
    - a. The skin may burn, flush, itch or break out. The face and tongue may swell. Cyanosis may be visible around the lips.
    - b. Breathing is difficult. There is a tightness or pain in the chest and persistent coughing.
    - c. Blood pressure drops and the pulse becomes weak or imperceptible.
    - d. Faintness and coma may ensue.

7. **Emergency Care.** Certain principles of initial treatment may be applied to all patients in shock.
    - a. Secure a clear airway and administer oxygen.
    - b. Control bleeding.
    - c. Elevate lower extremities if injuries to them do not make this inadvisable.
    - d. Splint fractures.
    - e. Avoid rough handling.
    - f. Prevent LOSS of body heat.
    - g. Keep the patient supine unless he is personally more comfortable in another position.
    - h. Record blood pressure, pulse and other vital signs at 5-minute intervals.
    - i. Do not feed the patient or give him anything to drink.

Note: The basic care for shock is to care for the whole patient to PREVENT shock.

Note: The only effective treatment for anaphylactic shock is an injection to combat the agent causing the reaction. The patient needs prompt transportation to a medical facility. The EMT may ASSIST and individual in administering medication (epinephrine) if allowed by State and local protocol.

Pneumatic Counter Pressure Devices
(0:50) 1:00

1. **Pneumatic Counter Pressure Device (MAST)**
    - a. **Purpose**
        - 1) Provides translocation of blood from the lower extremities and abdomen and increased peripheral resistance.
        - 2) Provides direct pressure for bleeding tamponade in lower extremities and abdomen and pelvis.
        - 3) Stabilizes fractures of pelvis and lower extremities.
    - b. **Indications**
        - 1) Blood pressure less than 90 mm Hg systolic with other clinical signs and symptoms of shock.

List on board as provided by students.

Relate the types of care to the type of shock.

Explain development and how device works.

Explain benefits for each case. Review State/local protocols.

- 2) Open or closed abdominal injury with shock.
- 3) Pelvic fractures with shock.
- 4) Femur fractures with shock.
- 5) Multiple trauma patients with shock.
- 6) Shock in a pregnant female (legs inflated only).
- 7) CPR (follow local and State protocol).
- 8) Other cases when ordered by a physician.

Note: At the time of this printing there was significant evidence of Pneumatic Counter Pressure Device effectiveness in CPR, due to increased peripheral resistance of the lower extremities and increased interthoracic pressure.

- c. **Contraindications (Absolute)**
  - 1) Pulmonary edema.
    - a) Fluid in lungs.
    - b) Rales.
    - c) Discussed in more detail in Lesson 19.
  - 2) All Pneumatic Counter Pressure Device applications on patients with a medical etiology must be checked for Pulmonary edema.
  - 3) If allowed or required by State/local protocol, demonstrate bilateral chest auscultation and the identification of rales.
- d. **Contraindications (Relative, Vary According to State and Local Protocols).**
  - 1) Eviscerations
  - 2) Impaled objects, legs or abdomen.
  - 3) Other

2. **Application and Inflation Procedures**
   - a. Place garment under patient.
     - 1) Slide from feet.
     - 2) Log roll.
     - 3) Placed on lifting apparatus prior to patient.
     - 4) Top of garment on inferior margin of rib cage.
   - b. Enclose left leg and secure.
   - c. Enclose right leg and secure.
   - d. Enclose abdomen and secure.
   - e. Open stopcocks.
   - f. Inflate with foot pump.
   - g. Check and record blood pressure.
   - h. Stop inflation when:
     - 1) Blood pressure reaches 100
     - 2) Velcro "crackles"
     - 3) Pop off valves release
   - i. Close stopcock
   - j. Check and record blood pressure
3. **Deflation Procedures**
   - a. **Do Not Deflate in the field** unless ordered by a physician knowledgeable in EMS.
   - b. Dangerous procedure.
   - c. Blood pressure must be stabilized with I.V.'s first.
   - d. Deflate until 5 mm Hg drop in B.P., stop and reestablish with I.V.'s.
   - e. Deflate abdomen first then the legs.

Instructor's Notes

Simulate inflation while talking.

Should inflate all compartments simultaneously or both legs first then abdomen.

Discuss problems of Velcro enclosures; i.e., improper alignment, damage hook, contamination, etc.

Describe problems with rapid deflation.

Explain in detail the dangers in deflation. Follow approved local protocols.

Time (Elapsed) Actual	**Contents**
	f. May take extended periods of time.
Intravenous Fluid Resuscitation (1:50) 0:10	1. **Not Considered** to be a basic EMT-A skill. 2. Expands blood volume. 3. Special training and certification required. 4. Basic EMT-A may be called upon to maintain an I.V. during transfer, if allowed by protocol.
Ten-Minute Break (2:00) 0:10	
Practice (Groups of No More Than 6 Students Per Manikin) (2:10) 1:40	1. Each student should perform the following skills on a fellow student or manikin as appropriate. a. Primary survey. b. Take and record a B.P. to within +6 mm Hg by ausculatory method. c. Application of Pneumatic Counter Pressure Device. d. Chest auscultation should be practiced here if required by protocol.
Summary and Questions (3:50) 0:10	1. Class questions or comments on the topic of the lesson. 2. Demonstration by selected class members of achievement of lesson objectives.
(4:00)	

Explain State and local protocols.

Note: Pneumatic Counter Pressure Devices should not be inflated on healthy live "patients", inflation must be simulated.

Questions class members on selected objectives.

Lesson 10
Soft Tissue Injuries

Objectives

At the conclusion of Lesson 10, the instructor will have provided sufficient information, demonstration, and practice to the student, to ensure his/her ability to:

- List the layers of skin
- List the two major functions of the skin.
- List four major structures within the skin and state the function of each.
- Describe five types of wounds and the emergency care of each.
- Describe how to care for a patient with an amputation and the care of the amputated part.
- Given a programmed patient, demonstrate proficiency in dressing and bandaging wounds of the following body parts:
  —top of head
  —forehead
  —ear
  —cheek
  —jaw
  —neck
  —shoulder
  —elbow/knee
  —arm/leg
  —hand/foot
- Given a programmed patient, demonstrate proficiency in applying a pressure dressing.

Requirements

Equipment:

- Universal dressing (one for each two students)
- Occlusive dressing (one for each student)
- 4 × 4 gauze pad (one for each student)
- Self-adherent bandage (one for each student)
- Roller Bandages—1″, 2″ & 3″ (one for each student)
- Gauze roll (one for each student)
- Bandage scissors (one for each 6 students)
- Triangular bandages (one for each student)
- Adhesive-type dressings (one for each student)
- Adhesive tape (2″ roll) (one for each student)
- Long air splint (one for each six students)
- Short air splint (one for each six students)
- Makeup kit.

Visual Aids:

- 35mm slides AAOS or similar

Instructor:

- One for lecture knowledgeable in all areas of subject matter for this class.
- One for each six students during practice sessions.

Instructor Preparation/Tasks

The Instructor Should:

- Review the lesson outline to assure understanding of contents and procedures.
- Review and preview all references and visual aids selected for the lesson by the course administrator.
- Select and prepare appropriate instructional aids in addition to those provided by the course administrator; if desired.

- Be familiar with all visual aids and other equipment to be demonstrated during the lesson.
- Provide the student with a clear understanding of the rationale and procedures for treating various wounds.
- Provide the student with ample practical experience to establish a proficiency in identifying dressing, bandaging and otherwise treating wounds on a programmed patient.
- Brief all instructor aides as to their roles and responsibilities during the lesson.

Time (Elapsed) Actual — **Contents**

Administrative Matters
(--) 0:05

1. Student attendance.
2. Announcements, etc.

Introduction
(0:05) 0:05

1. **Lesson Coverage**
   a. Design and functions of the skin.
   b. Types of wounds and their signs and significance.
   c. Techniques of dressing and bandaging.

Note: Dressing and bandaging will be confined to the extremities, head, neck, shoulders, and hip. Dressing and bandaging of the chest and eye will be covered in subsequent lessons.

2. **Lesson Objectives**
   a. List the layers of skin.
   b. List the two major functions of the skin.
   c. List four major structures within the skin and state the function of each.
   d. Describe five types of wounds and the emergency care of each.
   e. Describe how to care for a patient with an amputation and the care of the amputated part.
   f. Given a programmed patient, demonstrate proficiency in dressing and bandaging wounds of the following body parts:
      1) top of head
      2) forehead
      3) ear
      4) cheek
      5) jaw
      6) neck
      7) shoulder
      8) elbow/knee
      9) arm/leg
      10) hand/foot
   g. Given a programmed patient, demonstrates proficiency in applying a pressure dressing.

The Skin
(0:10) 0:10

1. **Functions**
   a. **Protection of the Body.** Skin is watertight and not penetrable by bacteria.
   b. **Regulation of Body Temperature.** Water evaporates from the skin surface in hot weather and skin blood vessels constrict in cold weather.
2. **Layers**
   a. **Epidermis**
      1) Outermost layer consists of dead cells constantly being rubbed off and replaced.
      2) Deeper part of the epidermis contains cells with some pigment granules.
   b. **Dermis.** The dermis contains many special structures of the skin:
      1) Sweat glands
      2) Sebaceous glands
      3) Hair follicles
      4) Blood vessels
      5) Specialized nerve endings.

3. **Subcutaneous Tissue.** Beneath the skin is a layer composed largely of fat that serves as a body insulator.

Closed Soft-Tissue Injuries
(0:20) 0:10

1. **Types**
   a. Closed injuries may range from damaged tissue beneath the skin to severe internal bleeding.
   b. A contusion (or bruise) develops in the damaged tissue.
   c. When much tissue is damaged, blood may pool in the damaged tissue and a hematoma may form.

Instructor's Notes

If new instructor, introduce self and instructor aides.

Review lesson coverage and objectives.

Emphasize importance of skills and knowledge covered.

Refer to lesson objectives in Student Study Guide and review with class.

Explain how functions are carried out.

Refer to illustration of skin layers.

Describe design and function of each.

Refer to illustration of contusion.

Refer to illustration of a hemotoma and describe its seriousness in bad fractures.

Explain that cold packs may help reduce swelling.

2. **Management**
   - a. Small bruises require not special care.
   - b. For severe injuries, bleeding should be controlled by counter pressure.
   - c. If bleeding is associated with a fracture, splinting is a must.

Open Soft Tissue Injuries
(0:30) 0:10

1. **Types**
   - a. Abrasion
   - b. Laceration
   - c. Avulsion
   - d. Puncture
2. **Management.** Procedures are:
   - a. Control bleeding (direct pressure, pressure points, elevation, tourniquet if necessary; splints for fractures).
   - b. Prevent further contamination—all open wounds will already be contaminated, but a sterile dressing and bandage will prevent further contamination. Clothing covering the wound should be removed.
   - c. Immobilize the part and keep the patient quiet.
   - d. Preserve avulsed parts.
   - e. Do not remove impaled objects.
     - 1) Stabilize the object with a bulky dressing.
     - 2) Shorten the object if necessary.

Dressing and Bandaging
(0:40) 0:20

1. **Functions**
   - a. Stop bleeding.
   - b. Protect wound from further damage.
   - c. Prevent further contamination and infection.
2. **Dressings**
   - a. Universal dressings
   - b. 4" × 4" gauze pads
   - c. Adhesive-type dressings
   - d. Occlusive dressings
3. **Bandages**
   - a. **Purpose.** A bandage holds a dressing in place. It should be tight enough to control bleeding but not so tight as to interfere with circulation.
   - b. **Types**
     - 1) Self-adherent bandages
     - 2) Gauze rolls
     - 3) Triangular bandages
     - 4) Adhesive tape
     - 5) Air splint
4. **Applying A Pressure Dressing.** Procedures are:
   - a. Cover wound with bulky sterile dressing.
   - b. Apply hand pressure over wound until bleeding stops.
   - c. Apply firm roller bandage.
   - d. Check for bleeding and circulation.
   - e. Apply additional dressings and bandages as necessary.
     - 1) Same general principles.
     - 2) Bleeding may be more serious in infants and must be controlled.
     - 3) Inform all patients as to what you are doing, be reassuring with pediatric patients.

Refer to illustrations of each type and describe distinguishing features.

Ask class to identify techniques for controlling bleeding.

Give reasons. Emphasize dangers in putting pressure on the object or tissue adjacent to it. Refer to illustration of stabilized impaled object.

Display each type; describe design features and use.

Display each type; describe design features and use.

Point out dangers of elastic bandages.

Demonstrate on student.

Time (Elapsed) Actual | **Contents**

Ten-Minute Break
(1:00) 0:10

Demonstration and Practice
(1:10) 1:40

1. **General Comments.** There are no hard and fast rules for dressing and bandaging wounds as long as the following conditions are met:
   a. Bleeding is controlled.
   b. The dressing is opened carefully and handled in an aseptic manner.
   c. The dressing adequately covers the wound.
   d. The dressing and bandage are snug but not so tight as to affect the blood supply to the restricted parts.
   e. The bandage is securely tied or fastened in place so that it will not move.
   f. There are no loose ends that could get caught on other objects while the patient is being moved.
2. **Student Practice.** Working in groups of two, each student should practice dressing and bandaging open or closed wounds in the following body areas:
   a. Arm/leg
   b. Elbow/knee
   c. Top of head.
   d. Forehead/scalp.
   e. Ear/cheek
   f. Jaw
   g. Neck
   h. Shoulder/hip
   i. Hand/foot

Note: At least one wound for each student should be an impaled object.

Note: For at least one wound for each student, the instructor should indicate that bleeding has not been controlled.

Note: The instructor should use the practice period not only for perfection of skills but also for emphasis of all lesson coverage required for students to achieve the lesson objectives.

Summary and Questions
(2:50) 0:10

1. Class questions or comments on the topic of the lesson.
2. Demonstration by selected class members of achievement of lesson objectives.

(3:00)

Divide class into groups of 6.

Provide a 10-minute break during the practice session.

Demonstrate dressing and bandaging techniques. Emphasize aseptic procedures.

Monitor and critique each student. Permit students to practice until they perform without error.

Programmed patients should be used here.

Question class members on selected objectives.

Lesson 11
Principles of Musculoskeletal Care and Fractures of the Upper Extremities

Objectives

At the conclusion of Lesson 11, the instructor will have provided sufficient information, demonstration, and practice to the student, to ensure his/her ability to:

- List the bones in the upper extremity.
- List the bones in the lower extremity.
- List the vertebrae groupings of the spinal column.
- List the bones or bone groupings of the thoracic cage.
- List and define the two types of fractures.
- List five classifications of fractures.
- List five signs of fractures.
- List three signs of dislocations.
- List three signs of sprain.

Equipment:

- Padded arm splints (one for each two students)
- Air splint—arm—full and half (one for each six students).
- Padded leg splints (one for each two students).
- Air splint—leg—full and half (one for each six students).
- Roller type bandages (one for each two students).
- Blanket (one for each six students).
- Cardboard/ladder/aluminum splints (one for each two students).
- Improvised splinting materials: magazines, pillows, etc.
- Traction splint (one for each three students).
- Long backboards/straps (one for each six students).
- Pneumatic Counter Pressure Device (MAST) (one for each six students).
- Skeleton.
- X-ray viewer.
- 35mm projector.
- Movie screen.
- Chalkboard.

Illustrations:

- Chart showing muscular system.
- Chart showing type of fractures; include:
  —greenstick
  —transverse
  —oblique
  —spiral
  —comminuted
  —angulated
  —open (simple)
  —closed (compound)
- Chart showing treatment of fractures of anatomical sites include:
  —clavicle
  —humerus
  —radius
  —wrist
  —fingers
  —hip
  —knee
  —fibula
  —foot
  —scapula
  —elbow
  —ulna
  —hand
  —pelvis
  —femur
  —tibia
  —ankle
  —toes

- Chart defining strains, sprains and dislocations.

Visual Aids:

- 35mm slides AAOS or similar.
- X-rays of fractures including:
  - —scapula
  - —humerus
  - —hip
  - —tibia
  - —clavicle
  - —radius
  - —femur
  - —knee

Instructors:

—One physician (preferably an orthopaedic surgeon) for lecture.

Instructor Preparation/Tasks

The Instructor Should:

- Review the lesson outline to assure understanding of contents and procedures.
- Review and preview all references and visual aids selected for the lesson by the course administrator.
- Select and prepare appropriate instructional aids in addition to those provided by the course administrator; if desired.
- Be familiar with all visual aids and other equipment to be demonstrated during the lesson.
- Provide the student with a clear understanding of anatomical location, function and name of all bones in the upper and lower extremities and thoracic cage.
- Provide the student with ample demonstration of techniques to utilize in immobilization of fractures; to ensure his/her ability to actively participate in Lesson 13 practical lab.

Instructor's Notes

Time (Elapsed) Actual	**Contents**
Administrative Matters (--) 0:05	1. Student attendance. 2. Announcements, etc.
Introduction (0:05) 0:05	1. **Lesson Coverage.** a. Design and functions of the muscular and skeletal systems. b. Types of fractures. c. Signs and symptoms of fractures, dislocations and sprains. d. A review of patient examination. e. Splinting fractures and dislocations of the upper extremity. 2. **Need For Lesson.** Various types of fractures will be encountered in accident situations. Proper care of the fracture patient will improve his recovery time and minimize additional damage to injured tissues. 3. **Lesson Objectives** a. List the bones in the upper extremity. b. List the bones in the lower extremity. c. List the vertebrae groupings of the spinal column. d. List the bones or bone groupings of the thoracic cage. e. List and define the two types of fractures. f. List five classifications of fractures. g. List five signs of fractures. h. List three signs of dislocations. i. List three signs of sprain.
The Muscular System (0:10) 0:05	1. **Functions** a. Muscle is a special form of tissue that contracts or shortens when stimulated. b. Muscles enable the body to move. 2. **Types** a. **Voluntary (Skeletal) Muscles** 1) Actions are under conscious control. 2) They are attached to bones directly or by tendons. 3) They are the bulk of the muscles forming the arms and the legs. 4) The diaphragm can be voluntarily controlled but one cannot hold one's breath forever; it is therefore both a voluntary and involuntary muscle. b. **Involuntary (Smooth) Muscles** 1) Actions are not under conscious control. 2) They handle the work of all internal organs except the heart. c. **Cardiac Muscle.** The heart is a special kind of involuntary muscle with a very good blood supply and its own regulatory system.
The Skeletal System (0:15) 0:10	1. **Functions.** The skeleton normally has 206 bones. It has the following functions: a. It gives form to the body. b. It supports the body and permits standing erect. c. Muscles attached to the skeleton by ligaments permit motion at most places (joints) where bones join together. There is no motion at a fused joint. d. It protects body organs, that is: 1) The brain is in the skull. 2) The heart and lungs are protected by the rib cage.

Instructor's Notes

If new instructor, introduce self and instructor aides.

Review lesson coverage and objectives. Emphasize importance of skills and knowledge covered.

Refer to lesson objective in Student Study Guide and review with class.

Refer to illustration of muscular system.

Explain how contraction of muscles permits movement.

Ask a member of the class if the diaphragm is a voluntary muscle.

Identify organs under involuntary control and explain their actions.

Identify bones on skeleton.

Identify joints that do and do not permit motion. Demonstrate any motion involved.

3) Much of the liver and spleen are protected by the lower ribs.

4) The spinal cord lies within the spinal canal. There is limited space between the walls of the canal and the cord.

2. **Skull.** The skull has two main divisions:
   a. Cranium
   b. Face (Facial bones and mandible)
3. **Spinal Column.** It has 33 bones, called vertebrae, and 5 sections:
   a. Cervical spine
   b. Thoracic (Dorsal) spine
   c. Lumbar spine
   d. Sacral spine
   e. Coccygeal spine
4. **Thorax.** The thorax is made up of:
   a. Twelve pairs of ribs.
   b. Twelve thoracic vertebrae.
   c. Sternum.
5. **The Upper Extremity.** The upper extremities are designed as follows:
   a. **Shoulder Girdle.** The upper extremities are attached to the shoulder girdle which is formed largely by the shoulder blade (scapula) and the collarbone (clavicle).
   b. **Arm.** The arm (shoulder to elbow) has one bone known as the humerus.
   c. **Forearm.** The forearm (elbow to wrist) has two bones: the radius on the thumb side and the ulna on the little finger side.
   d. **Hand.** The hand has many bones including those of the wrist and fingers.
6. **Pelvis and the Lower Extremity.** The pelvis and lower extremities are designed as follows:
   a. **Pelvis.** The pelvis is a bony ring formed by the sacrum and two pelvic bones.
   b. **Hip Joint.** The lower extremity is attached to the pelvis at the hip joint.
   c. **Upper Leg** (Thigh). The upper leg contains one bone known as the femur. It is the longest, heaviest and strongest bone of the body. Fractures of the femur are serious.
   d. **Lower Leg.** The lower leg has two bones; the tibia in front and fibula in back.
   e. **Foot.** As with the hand, the foot has many bones.
   f. **Kneecap.** The leg also has a bone at the kneecap known as the patella.

General Concepts of Fractures and Dislocations
(0:25) 0:15

1. **Fractures**
   a. **Definition.** A fracture means a break in a bone.
   b. **Types.** Basically, fractures are two types:
      1) **Open** (Compound). The skin has been broken.
      2) **Closed** (Simple). The skin has not been broken.

      Note: Both open and closed fractures can result in serious blood loss. In addition, open fractures have the danger of infection.
   c. **Other Classifications.** Fractures may also be classified by appearance:
      1) Greenstick
      2) Transverse
      3) Oblique
      4) Spiral
      5) Comminuted
      6) Impacted

Instructor's Notes

Describe danger of spine injuries.

Refer to illustration of each type and describe distinguishing features.

d. **Signs**

1) **Deformity.** The arm or leg may be angled where there is no joint.

2) **Tenderness.** The point of the break may be tender or sore.

3) **Crepitus.** If the patient moves, there may be a grating sound or sensation where the broken ends of the bone rub together. The rescuer should not attempt to confirm this sign since movement of the broken ends could damage nerves and blood vessels.

4) **Swelling and Discoloration.** Swelling and discoloration due to fluid or blood in the tissues may not be apparent for several hours.

5) **Loss of Use.** The patient will not be able to move the limb or will do so with great pain.

6) **Exposed Fragments.** In open fractures, fragments of the bone may protrude through the skin.

2. **Dislocations**

a. **Definition.** A dislocation is the displacement of the bone ends that form a joint.

b. **Location.** Any joint may be dislocated; those frequently dislocated are the shoulder, elbow, fingers, hip and ankle.

c. **Signs.** Signs are similar to those for fractures, the most important being:

1) Deformity of the joint.

2) Pain or swelling.

3) Loss of movement.

4) A joint locked in a deformed position.

3. **Sprains**

a. **Definition.** A sprain is a partial tear or stretching of a ligament.

b. **Signs.** Signs are similar to those for fractures and dislocations except there are never protruding bone fragments and there is no deformity except swelling at a joint.

4. **Differentiating Between Fractures, Dislocations and Sprains.**

a. **Differentiating Signs.** The following signs can be used to diagnose a fracture or dislocation.

1) Fracture—an angle in an arm or leg where there is no joint.

2) Fracture—an open wound with a bone or bone fragments protruding.

3) Dislocation—a deformity at a joint.

b. **Note:** If the above signs are not present but there is pain or tenderness or loss of movement of an extremity, it should be assumed that there is a fracture and the limb should be treated accordingly.

Review of Patient Examination
(0:40) 0:15

1. **Stages.** As indicated previously, a patient survey is performed in two stages: an initial survey of life-threatening problems and a secondary survey of injuries not threatening to life.

2. **Secondary Survey.** In the secondary survey, the EMT makes a head-to-toe examination of the patient. He systematically observes and feels for wounds and deformities. He asks conscious patients if they feel pain or sensation. For unconscious patients, he checks for indications of pain, and sensation.

Note: The EMT-A should always observe the accident scene and check witnesses to attempt to determine any mechanism of injury.

Note: Emphasize importance of establishing rapport with conscious patient—identifying self, obtaining and using patient's name, explaining intended movements and procedures, reassuring patient.

Refer to illustration of angulated fracture.

Explain also that the mechanism of injury may lead the rescuer to expect a fracture.

Refer to illustrations of dislocated finger and shoulder.

Explain that an examination for injuries will be demonstrated even though implications of all signs for all injuries have not been covered. Explain the importance of thorough assessment to locate fractures.

Stress importance, give examples

Time
(Elapsed)
Actual

Contents

a. **Head**
   1) Observe for confusion, unresponsiveness, unconsciousness.
   2) Check pupils.
   3) Observe for lacerations and contusions about the face and scalp.
   4) Feel gently for depressions in the skull.
   5) Check ears and nose for fluid or blood.
   6) Check mouth for foreign objects, bleeding.

b. **Neck**
   1) Observe for cuts, bruises, deformities.
   2) Feel for areas of tenderness or deformities.

c. **Upper Extremities**
   1) Check for cuts, bruises, pain, deformities, unusual positions.
   2) Check for sensation and circulation.
   3) Ask patient if he can move arms only if other procedures show no injury.

d. **Chest**
   1) Check for bruises, pain, deformities.
   2) Check that both sides of the chest expand normally upon inspiration.

e. **Back and Buttocks**
   1) Check for cuts, bruises, pain, deformities.

f. **Abdomen and Pelvis**
   1) Check abdomen for tenderness, rigidity.
   2) Compress pelvis gently.

g. **Lower Extremities**
   1) Check for cuts, bruises, pain, deformities, unusual positions.
   2) Check for sensation and circulation.
   3) Ask patient if he can move his legs only if other procedures show no injury.

h. **Medical History**
   1) Check for tags, bracelets, etc.
   2) Vital signs.
   3) Question patient.

Ten-Minute Break
(0:55) 0:10

General Principles of Splinting
(1:05) 0:10

1. **Reason for Splinting**

   a. The primary objective for splinting is to prevent motion of bone fragments or dislocated joints.

   b. Good emergency care can decrease hospital time and speed the patient's recovery by preventing or minimizing the following complications:
      1) Damage to muscles, nerves or blood vessels caused by broken ends of bone.
      2) Laceration of the skin, that is, a closed fracture becomes an open fracture.
      3) Restriction of blood flow as a result of bone ends pressing against blood vessels.
      4) Excessive bleeding due to tissue damage caused by bone ends.
      5) Increased pain associated with movement of bone ends.
      6) Paralysis of extremities due to fractured spine—discussed in a subsequent lesson.

Instructor's Notes

Demonstrate on a student. Explain what you are doing, implications of what you find and actions you would take.

Time (Elapsed) Actual | **Contents**

2. **General Rules**
   a. Remove or cut away clothing.
   b. Cover all wounds with a sterile dressing.
   c. Do not replace protruding bones.
   d. Note and record circulation and neurological status distal to the injury.
   e. Straighten deformities near joint with gentle steady traction unless pain is significant or resistance to correction is encountered.
   f. Straighten an angulated fracture before splinting—use gentle traction.
   g. Correct neck and spine deformities only if necessary to maintain an open airway.
   h. Pad each splint carefully to prevent pressure and discomfort to the patient.
   i. Immobilize the joint above and below the fracture, or the bone above and below a dislocation.
   j. Splint the patient BEFORE moving him.
   k. When in doubt, splint.

Splinting the Upper Extremity
(1:15) 0:45

1. **Equipment**
   a. Splints—rigid and air
   b. Sling
   c. Swathe
   d. Pillow
2. **Fractures of the Clavicle**—apply a sling and swathe.
3. **Fracture of the Scapula**—apply a sling and swathe.
4. **Dislocations of the Acromioclavicular Joint**—apply a sling and swathe.
5. **Anterior Dislocations of the Shoulder Joint**—Place pillow or rolled blanket between area and chest, apply sling and swathe.
6. **Fractures of the Humerus**
   a. **Proximal End**—apply sling and swathe or bind arm to trunk.
   b. **Shaft**—apply sling and swathe.
   c. **Distal End**—apply sling and swathe or long-arm padded splint; check circulation.
7. **Dislocations of the Elbow Joint**—apply sling and swathe or long-arm padded splint; check circulation.
8. **Fractures of the Proximal Ulna and Radius**—apply an air splint, folded pillow, long-arm padded splint, or sling and swathe.
9. **Fractures of the Forearm**—apply an air splint or long-arm padded splint; apply sling.
10. **Fractures of the Wrist**—apply a bulky hand dressing and a padded board splint or air splint; apply sling.
11 **Dislocations of the Wrist**—apply a bulky hand dressing and an air splint or long-arm padded splint; apply sling.
12. **Fractures and Dislocations of the Hand and Fingers**—splint in position of function—place roll of gauze in palm; apply air or padded splint.

Ten-Minute Break
(2:00) 0:10

Practice
(2:10) 0:50

1. Working in pairs, each student should practice immobilizing fractures of:
   a. Clavicle (using sling).
   b. Humerus (using sling and swathe).
   c. Elbow (using rigid splint).
   d. Forearm (using air and rigid splints).

Stress checking circulation to neurological status pre and post splinting

Display and describe splints and triangular and roller type bandages.

Describe typical causes of each type of fracture or dislocation. Display illustration of each type and describe signs. Demonstrate application of splints, slings and swathe. Demonstrate application of improvised splints—pillows, magazines, etc.—and local splinting options. Stress the importance of checking circulation pre and post splinting for all fractures.

Divide class into groups of 6. Monitor and critique each student. Permit students to practice until they can perform without error.

Time (Elapsed) Actual	Contents

2. Working in pairs, each student should practice immobilizing dislocations of the shoulder using a blanket, sling and swathe.

Note: The instructor should use the practice period not only for perfection of skills but also for emphasis of all lesson coverage required for students to achieve the lesson objectives.

Note: Complete proficiency is not expected here. Lesson 13 is a practical lab for the refinement of fracture care techniques.

Note: Splint application should include:

- Preparation of splint before handling the fracture.
- Check distal pulse pre and post application.
- Immobilization of joint above and below fracture site and,
- Immobilization of bones above and below joint.

(3:00)

Lesson 12
Fractures of the Pelvis, Hip and Lower Extremities

Objectives

At the conclusion of Lesson 12, the instructor will have provided sufficient information, demonstration and practice to the student, to ensure his/her ability to:

- Demonstrate correct application proficiency in the use of the following splints:
  - —Sling and swathe
  - —Wire ladder splint
  - —Traction splint
  - —Airsplint—arm/leg
  - —Padded board
  - —Pneumatic counter pressure device
  - —Pillow splint
  - —Improvised splint
- Demonstrate proper immobilization techniques for fractures/dislocations of:
  - —clavicle
  - —humerus
  - —arm
  - —pelvis
  - —femur
  - —leg
  - —shoulder
  - —elbow
  - —wrist/hand
  - —hip
  - —knee
  - —foot

Equipment:

- Padded arm splints (one for each two students).
- Air splint—arm—full and half (one for each six students).
- Padded leg splints (one for each two students).
- Air splint—leg—full and half (one for each six students).
- Roller type bandages (one for each two students).
- Blanket (one for each six students).
- Cardboard/ladder/aluminum splints (one for each two students).
- Improvised splinting materials—magazines, pillows, etc.
- Traction splint (one for each three students).
- Long backboard/straps (one for each six students).
- MAST (one for each six students).
- X-ray viewer.
- Chalkboard.

Instructors:

- One for each six students during entire lesson.

Instructor Preparation/Tasks

The Instructor Should:

—Review the lesson outline to assure understanding of contents and procedures.

- Be familiar with all visual aids and other equipment to be demonstrated during the lesson.
- Brief all instructor aides as to their roles and responsibilities during the lesson.
- Provide the student with ample demonstration of techniques to utilize in immobilization of fractures; to ensure his/her ability to actively participate in Lesson 13: Practical Lab.

Time
(Elapsed)
Actual

Contents

Administrative Matters
(--) 0:05

1. Student attendance.
2. Announcements, etc.

Introduction
(0:05) 0:05

1. **Lesson Coverage.** Causes, signs, dangers, care for fractures/dislocations of lower extremity; practice in performing examination for injuries.

2. **Need For Lesson.** Fractures of the femur can result in severe blood loss. Fractures of the pelvis can result in injuries to internal organs. Proper care of all fracture patients will improve their recovery time and minimize additional damage to injured tissues.

3. **Lesson Objectives**
   - a. Demonstrate correct application proficiency in the use of the following splints:
     - 1) Sling and swathe
     - 2) Wire ladder splint
     - 3) Traction splint
     - 4) Airsplint—arm/leg
     - 5) Padded board
     - 6) Pneumatic counter pressure device (MAST)
     - 7) Pillow splint
     - 8) Cardboard
   - b. Demonstrate proper immobilization techniques for fractures/dislocations of:
     - 1) Clavicle
     - 2) Humerus
     - 3) Arm
     - 4) Pelvis
     - 5) Femur
     - 6) Leg
     - 7) Shoulder
     - 8) Elbow
     - 9) Wrist/hand
     - 10) Hip
     - 11) Knee
     - 12) Foot

The Pelvis
(0:10) 0:05

1. **Anatomy and Physiology**
   - a. The pelvic girdle is formed by the lower five vertebrae (which are fused together and known as the sacrum) and the hip bones.
   - b. It contains the sockets of the hip joints that join with the femur.
   - c. It protects the lower portion of the abdominal cavity including the bladder, rectum and internal female sexual organs.
2. **Fractures**
   - a. **Signs.** Patient complains of pain. Pain is felt when sides of the pelvis are compressed.
   - b. **Emergency Care.** Scoop stretcher spine board, (PCPD), etc. Treat for shock.
   - c. **Transportation.** The patient should be transported on a long spine board.
   - d. **Dangers.** Shock may result since blood loss can be severe. There may be injuries to organs of the genitourinary system.

The Hip
(0:15) 0:20

1. **Dislocations**
   - a. **Anterior Dislocation.** The thigh is stretched out from the side of the body, lies flat and is externally rotated away from the body.
   - b. **Posterior Dislocation.** The knee is typically drawn up and the thigh is rotated inward toward the body. The patient may be unable to raise his toes or his foot if the sciatic nerve has been damaged.
   - c. **Emergency Care.** The dislocated limb should be supported by pillows or rolled blankets and long straps. The patient should be transported on a rigid stretcher.

Instructor's Notes

If new instructor, introduce self and instructor aides.

Review lesson coverage and objectives. Emphasize importance of skills and knowledge covered.

Refer to lesson objectives in Student Study Guide and review with class.

Refer to illustration of pelvic girdle and its contents. Identify bones.

Discuss typical causes. Demonstrate compression. Explain procedures. Refer to illustration of pelvic girdle and its contents.

Describe common causes. Refer to illustrations of anterior and posterior hip dislocations.

Demonstrate on student.

2. **Fractures**
    a. **Signs.** The patient will usually lie with the foot turned outward. The leg may appear to be shortened, although sometimes there is no deformity.
    b. **Dangers.** Shock may result since blood loss can be severe.
    c. **Care.** Application of traction splint is best. Adequate immobilization can be obtained by placing pillows or folded blankets between the legs and tying the legs together.
    d. **Pneumatic Counter Pressure Device (MAST).** May be useful in the splinting of hip fractures.

    Note 1: In demonstrations of techniques for immobilizing fractures, instructor should use splints normally available in the area. Regardless of whether or not these splints are padded, instructor should explain procedures and necessity for padding splints so that students will understand basic principles.

    Note 2: In demonstrations using traction splints, the instructor should use splints normally available in the area.

Fractures of the Shaft of the Femur
(0:35) 0:25

1. **Signs.** There is often marked deformity. The leg below the fracture will be severely angulated or rotated. Fractures are often open.
2. **Dangers.** Shock may develop as there will be a large blood loss whether the fracture is open or closed. Circulation in the foot may be impaired.
3. **Care.** The leg should be gently straightened and immobilized with a traction splint.

Injuries About the Knee
(1:00) 0:15

1. **Sprains**
    a. **Signs.** Swelling, tenderness, loss of function.
    b. **Care.** The leg should be gently straightened and a long-leg rigid splint applied. All suspected sprains should be splinted with a long-leg rigid splint or air splint.
2. **Dislocations**
    a. **Signs.** Deformity is grotesque. Circulation in the foot may be impaired.
    b. **Care.** The deformity should be straightened. The leg should be immobilized with a traction splint (no traction), a rigid long-leg splint, an air splint, or pillow or blanket splint.

    Note: The EMT should never force a deformity straight and should never straighten a deformity if it causes increased pain to the patient.
3. **Fractures**
    a. **Signs.** There is usually much pain and swelling and there may be significant deformity. Circulation in the foot may be impaired.
    b. **Care.** The deformity should be gently straightened, and a splint applied as for dislocations.
4. **Dislocation of the Patella**
    a. **Signs.** Usually the knee is flexed and the patella is displaced laterally.
    b. **Care.** The leg should be gently straightened. The leg should be immobilized in a long-leg splint or air splint.

Ten-Minute Break
(1:15) 0:10

Fractures of the Tibia or Fibula Shaft
(1:25) 0:10

1. **Signs.** The leg may be severely deformed. Fractures of the tibia are frequently open. Circulation in the foot may be impaired.
2. **Care.** The deformity should be gently straightened. A traction splint, (no traction) long-leg rigid splint or air splint may be applied.

Instructor's Notes

Describe common causes. Refer to illustration of fractured hip.

Demonstrate immobilization by tying legs together.

In elderly patients, sandbags and scoop stretchers may cause the least pain.

Refer to illustration of fractured femur.

Demonstrate application of traction splint. Remind students not to use excess traction.

Refer to illustrations of deformed sprained knee.

Demonstrate application of a long-leg rigid splint and air splint.

Refer to illustration of dislocated knee.

Refer to illustration of fractured knee.

Refer to illustration of dislocated patella.

Refer to illustration of fractured tibia.

143

Time (Elapsed) Actual | **Contents**

Injuries About the Ankle
(1:35) 0:10

1. **Signs.** There may be severe deformity. It will probably not be possible to differentiate between a dislocation and a fracture.
2. **Care.** Deformities should be gently straightened. A long- or short-leg rigid splint, air splint or pillow splint should be applied.

Fractures of the Foot (Tarsals, Metatarsals, Phalanges)
(1:45) 0:05

1. **Signs.** There is usually pain and swelling. A spine injury should be suspected if heel pain is associated with back pain, or a fall from heights.
2. **Care.** The foot should be immobilized in a rigid short-leg splint, air splint or pillow splint.

Review and Questions
(1:50) 0:10

1. Review and summarize general principles of fracture care.
2. Solicit questions from the group.

Practice
(2:00) 1:00

1. Working in groups of two or three as appropriate, each student should practice the following:
   a. Immobilizing a fractured hip with a pillow or blanket.
   b. Immobilizing a fractured femur with a traction splint.
   c. Immobilizing a fractured femur with a long board splint.
   d. Immobilizing a dislocated knee with an air splint.
   e. Immobilizing a fractured ankle with a short board splint.
   f. Immobilizing a fractured foot in a pillow splint.
   g. Immobilizing a patient with a fractured pelvis on a long backboard.
2. Splint application should include:
   a. Preparation of splint before handling the fracture.
   b. Check distal pulse pre and post application.
   c. Immobilization of joint above and below fracture site.
   d. Immobilization of bones above and below joint.

   Note: The instructor should use the practice period not only for perfection of skills but also for emphasis of all lesson coverage required for students to achieve the lesson objectives. Complete proficiency is not expected here. Lesson 13 is a practical lab for the refinement of fracture care techniques.

(3:00)

144

Refer to illustration of fractured ankle.

Demonstrate application of short-leg splint.

Explain reason.

Demonstrate application of pillow splint.

Divide class groups into 6. Provide a 10-minute break during the practice period.

Lesson 13
Practical Lab: Fracture Care of the Upper and Lower Extremities

Objectives

At the conclusion of Lesson 13, the instructor will have provided sufficient information, demonstration and practice to the student, to ensure his/her ability to:

- Demonstrate the correct application of the following splints:
  - —Sling and swathe
  - —Wire ladder splint
  - —Traction splint
  - —Airsplint—arm/leg
  - —Padded board
  - —Pneumatic Counter Pressure Device (MAST)
  - —Pillow splint
  - —Improvised splint
- Demonstrate proper immobilization techniques for fractures/dislocations of:
  - —Clavicle
  - —Humerus
  - —Arm
  - —Pelvis
  - —Femur
  - —Leg
  - —Shoulder
  - —Elbow
  - —Wrist/hand
  - —Hip
  - —Knee
  - —Foot

Requirements

Equipment:

- Padded arm splints (one for each two students).
- Air splint—arm—full and half (one for each six students).
- Padded leg splints (one for each two students).
- Air splint—leg—full and half (one for each six students).
- Roller type bandages (one for each two students).
- Blanket (one for each six students).
- Cardboard/ladder/aluminum splints (one for each two students).
- Improvised splinting materials—magazines, pillows, etc.
- Traction splint (one for each three students).
- Long backboard/straps (one for each six students).
- Pneumatic Counter Pressure Device (MAST) (one for each six students).
- X-ray viewer.
- Chalkboard.
- Make-up kit.

Instructors:

- One for each six students during entire lesson.

Instructor Preparation/Tasks

The Instructor Should:

- Review the lesson outline to assure understanding of contents and procedures.
- Be familiar with all visual aids and other equipment to be demonstrated during the lesson.
- Provide the student with ample practical experience to establish proficiency in all areas of fracture immobilization covered in Lessons 11 and 12.
- Brief all instructor aides as to their roles and responsibilities during the lesson.
- Prepare and brief patient for simulated patient programs.

Time (Elapsed) Actual — **Contents**

Administrative Matters
(--) 0:05

1. Student attendance.
2. Announcements, etc.

Introduction
(0:05) 0:05

1. **Lesson Coverage.**
   a. Care for fractures of the upper extremity.
   b. Care for fractures of the lower extremity.
2. **Need For Lesson.** Proper splinting reduces pain and lessens the possibility of additional injury.
3. **Lesson Objectives.**
   a. Demonstrate the correct application of the following splints:
      1) Sling and swathe
      2) Wire ladder splint
      3) Traction splint
      4) Air splint—arm/leg
      5) Padded board
      6) Pneumatic counter pressure device (MAST)
      7) Pillow splint
      8) Improvised splint
   b. Demonstrate proper immobilization techniques for fractures/dislocations of:
      1) Clavicle
      2) Humerus
      3) Arm
      4) Pelvis
      5) Femur
      6) Leg
      7) Shoulder
      8) Elbow
      9) Wrist/hand
      10) Hip
      11) Knee
      12) Foot

Practice
(0:10) 2:40

1. Working in groups of six, each student should demonstrate the use of:
   a. Sling and swathe
   b. Wire ladder splint
   c. Traction splint
   d. Air splint—arm/leg
   e. Padded board splint
   f. Pneumatic Counter Pressure Device (MAST)
   g. Pillow splint
   h. Cardboard splint
2. Each student should complete a primary and secondary survey on a simulated patient and identify simulated fractures at one or more of the following sites:
   a. Clavicle
   b. Shoulder
   c. Humerus
   d. Elbow
   e. Arm
   f. Wrist/hand
   g. Pelvis
   h. Hip
   i. Femur
   j. Knee
   k. Leg
   l. Foot

Summary and Questions
(2:50) 0:10

1. Class questions or comments on the topic of the lesson.
2. Demonstration by selected class members of achievement of lesson objectives.

(3:00)

Instructor's Notes

If new instructor, introduce self and instructor aides.

Review lesson coverage and objectives. Emphasize importance of skills covered.

Refer to lesson objectives in the Student Study Guide and review with the class.

Instructor aides should closely monitor these activities using skills checklists. Splint application should include: preparation of splint before handling fracture, checking of distal pulse pre and post splint application, immobilization of joint above/below site, and immobilization of bones above/below joint. The importance of proper assessment should be stressed here.

Build one ten-minute break into the practice session.

Question class members on selected objectives.

Lesson 14
Injuries of the Head, Face, Eye, Neck and Spine

Objectives

At the conclusion of Lesson 14, the instructor will have provided sufficient information, demonstration, and practice to the student, to ensure his/her ability to:

- Describe how brain is protected from injury.
- List functions of central nervous system.
- List functions of peripheral nervous system.
- List functions of autonomic nervous system.
- State function of cerebrospinal fluid.
- List four types of brain injury and how they occur.
- List three types of intracranial hematoma and how they occur.
- List five signs/symptoms of possible brain injury.
- List three signs/symptoms of possible skull fracture.
- Describe treatment for blood and/or cerebrospinal fluid loss of nose/ears.
- List steps in emergency care for patient with suspected skull fracture.
  Describe treatment for suspected brain injury.
- List steps in emergency care for soft tissue neck/facial injury.
- List six signs/symptoms of suspected neck/spine injury.
- Demonstrate how to open airway in patient with suspected neck injury.
- Demonstrate how to evaluate conscious patient with suspected spinal injury.
- Demonstrate how to evaluate unconscious patient with suspected spinal injury.
- List three situations when a spinal injury should be suspected.
- Demonstrate proper cervical traction.
- Demonstrate proper application of three (one improvised) cervical immobilization devices.
- Demonstrate proper short spine board immobilization technique.
- List steps in proper spinal cord injury management.
- Demonstrate 4-person lift for patient with suspected spinal injury.
- Demonstrate 4-person log roll for patient with suspected spinal injury.
- Demonstrate proper application of long spine board.
- Demonstrate how to "package" a patient with a suspected spinal injury to ensure no movement with board turned/tipped.
- Demonstrate proper helmet removal techniques.
- List three instances when a short spine board should be used.
- List seven anatomical structures of the eye and describe the function of each.
- List the possible normal/abnormal pupil reactions/size.
- Describe the treatment for chemical burns of the eye.
- Describe the treatment for thermal burns of the eye (lid).
- Describe the treatment for light burns of the eye.
- Demonstrate the proper bandaging technique for an eye with an impaled object.
- Describe treatment for a lacerated eyelid or eyeball.
- Describe treatment for a lacerated eyeball.
- Describe special considerations for patients with contact lenses.

Requirements

Material:

- Brochure: How and When to Remove a Safety Helmet from a Patient With Head Injuries (one for each student) AAOS or similar.

Equipment: (one of each)

- Oval eye pad
- Cotton tipped application
- Paper cup
- Contact removal kit
- 4 × 4 gauze pad
- Triangular bandage
- 3" Kling
- Cervical collar (small, medium, large)
- Blanket
- Sandbags
- Short Backboards/straps
- Long Backboards/straps
- Towels (full size)
- Safety Helmet
- 35mm projector
- Movie screen
- Chalkboard

Illustrations:

- Chart listing the normal/abnormal pupil reaction/size
- Chart listing special considerations for patients/contact lenses.
- Chart listing functions of CNS.
- Chart listing functions of peripheral and autonomic nervous system.
- Chart listing steps in emergency care for patient/suspected skull fracture.

Visual Aids:

—35mm slides AAOS or similar.

Instructor:

—One for lecture knowledgeable in all areas of subject matter for this lesson.

Instructor Preparation/Tasks

The Instructor Should:

- Review the lesson outline to assure understanding of contents and procedures.
- Review and preview all references and visual aids selected for the lesson by the course administrator.
- Select and prepare appropriate instructional aids in addition to those provided by the course administrator; if desired.
- Be familiar with all visual aids and other equipment to be demonstrated during the lesson.
- Provide the student with a clear understanding of types of injuries and proper treatment techniques for those injuries; in the area of the head, face, eye, neck and spine.

Time (Elapsed) Actual | **Contents**

Administrative Matters
(--) 0:05

1. Student attendance.
2. Announcements, etc.

Introduction
(0:05) 0:05

1. **Lesson Coverage**
   a. Design and functions of the eye and nervous system.
   b. Signs, seriousness and techniques of care for patients with injuries to the head and spine.
2. **Need For Lesson**
   a. Head injuries can result in brain damage, spine injuries in paralysis, and face and neck injuries in severe airway difficulties.
   b. It is especially important that the rescuer be knowledgeable about the signs, seriousness and management of these patients.
3. **Lesson Objectives**
   a. Describe how brain is protected from injury.
   b. List functions of central nervous system.
   c. List functions of peripheral nervous system.
   d. List functions of autonomic nervous system.
   e. State function of cerebrospinal fluid.
   f. List four types of brain injury and how they occur.
   g. List three types of intracranial hemotoma and how they occur.
   h. List five signs/symptoms of possible brain injury.
   i. List three signs/symptoms of possible skull fracture.
   j. Describe treatment for blood and/or cerebrospinal fluid loss of nose/ears.
   k. List steps in emergency care for patient with suspected skull fracture.
   l. Describe treatment for suspected brain injury.
   m. List five examples of problems resulting from facial or neck injury.
   n. List steps in emergency care for soft tissue neck/facial injury.
   o. List six signs/symptoms of suspected neck/spine injury.
   p. Demonstrate how to open airway in patient with suspected neck injury.
   q. Demonstrate how to evaluate conscious patient with suspected spinal injury.
   r. Demonstrate how to evaluate unconscious patient with suspected spinal injury.
   s. List three situations when a spinal injury should be suspected.
   t. Demonstrate proper cervical traction.
   u. Demonstrate proper application of three (one improvised) cervical immobilization devices.
   v. Demonstrate proper short spine board immobilization technique.
   w. List steps in proper spinal cord injury management.
   x. Demonstrate 4-person lift for patient with suspected spinal injury.
   y. Demonstrate 4-person log roll for patient with suspected spinal injury.
   z. Demonstrate proper application of long spine board.
   aa. Demonstrate how to "package" a patient with a suspected spinal injury to ensure no movement with board turned/tipped.
   bb. Demonstrate proper helmet removal techniques.
   cc. List three instances when a short spine board should be used.
   dd. List seven anatomical structures of the eye and describe the function of each.
   ee. List the possible normal/abnormal pupil reactions/size.
   ff. Describe the treatment for chemical burns of the eye.
   gg. Describe the treatment for thermal burns of the eye (lid).

Instructor's Notes

If new instructor, introduce self and instructor aides.

Review lesson coverage and objectives. Emphasize importance of skills and knowledge covered.

Refer to lesson objectives in Student Study Guide and review with class.

Time (Elapsed) Actual | **Contents**

hh. Describe the treatment for light burns of the eye.

ii. Demonstrate the proper bandaging technique for an eye with an impaled object.

jj. Describe treatment for a lacerated eyelid or eyeball.

kk. Describe special considerations for patients with contact lenses.

The Nervous System
(0:10) 0:10

1. **Components.** The nervous system consists of the brain, spinal cord, and nerves.
2. **Brain**
   a. It is the controlling organ of the body and the center of consciousness.
   b. It occupies the entire space within the cranium.
   c. Each type of brain cell has a specific function and certain parts of the brain perform certain functions.
3. **Spinal Cord**
   a. The spinal cord consists of long tracts of nerves that join the brain with all body organs and parts.
   b. It is protected by the spinal column.
4. **Nerves**
   a. Sensory nerves send information to the brain on what the different parts of the body are doing relative to their surroundings.
   b. Motor nerves emanate from the brain and result in stimulation of a muscle or organ.
5. **Actions**
   a. Automatic
   b. Reflex
   c. Conscious
   d. Voluntary control of muscles
   e. Involuntary control of muscles

Injuries To The Spine
(0:20) 0:30

1. **Dangers**
   a. It is especially important to provide proper care for patients with suspected spinal injuries since damage to the spinal cord can result in paralysis.
   b. Therefore, all unconscious accident patients should be treated as if they had spinal injuries and all conscious patients should be carefully checked for spine injuries prior to movement.
   c. Accident patients with weakness or numbness of arms or legs must be assumed to have spine injuries.
2. **Signs.** The following signs may be indicative of spinal cord injury:
   a. **Pain.** The patient may be aware of pain in the area of injury.
   b. **Tenderness.** Gently touching the suspected area may result in increased pain.
   c. **Painful Movement.** If the patient tries to move, the pain may increase—never try to move the injured area for the patient.
   d. **Deformity.** Deformity is rare although there may be an abnormal bend or bony prominence.
   e. **Cuts and Bruises.** Patients with neck fractures will have cuts and bruises on the head or face. Patients with injuries in other spine area will have bruises on the shoulders, back or abdomen.
   f. **Paralysis.** If the patient is unable to move or feels no sensation in some part of his body, he may have a spinal fracture.
3. **Steps for Checking Signs and Symptoms**

Instructor's Notes

Refer to illustration of nervous system.

Give examples.

Give examples.

Give examples.

Give examples.

List signs on chalkboard.

Indicate that the mechanism of injury may indicate spine injury in absence of other signs.

a. **Conscious Patients**

1) **Ask**—what happened, where does it hurt, can you move your hands or feet, can you feel me touching your hands (feet)?

2) **Look**—for bruises, cuts, deformities.

3) **Feel**—for areas of tenderness, deformities.

4) **Have Patient Move**—if he can do so comfortably.

b. **Unconscious Patients**

1) **Look**—for cuts, bruises, deformities.

2) **Feel**—for deformities.

3) **Ask Others**—what happened?

4. **Complications**

a. Persons with neck injuries may have paralyzed chest muscles. Breathing can then be accomplished only by the diaphragm. Inadequate breathing and shock may result.

b. Paralysis of the nerves affecting the size of blood vessels may occur and shock may result.

5. **Emergency Care**

a. In addition to caring for life-threatening problems, the most important consideration for a victim with a suspected spine injury is to immobilize him BEFORE moving.

b. Unless it is necessary to change a patient's position to maintain an open airway or there is some other compelling reason, it is best to splint the neck or back in the original position of the deformity.

c. Patients with suspected spine injuries will require cervical collars and immobilization on a spine board or special stretcher. Demonstration and practice will be provided in this and in subsequent lessons.

d. A helmet should be removed unless there is difficulty in removing it, or increased pain. In such instances, the patient should be immobilized on the spine board with the helmet in place.

Ten-Minute Break
(0:50) 0:10

Injuries to the Skull and Brain
(1:00) 0:30

1. **Skull Fractures.** Fractures of the skull are common in accident victims. Their seriousness depends on the amount of injury to the brain. Serious brain injury is much more common when there is not skull fracture.

a. **Types.** Skull fractures may be open or closed. They may also be:

1) **Linear**—line fracture or crack in the skull. Most skull fractures are of this type.

2) **Comminuted**—multiple cracks radiate from the center of impact.

3) **Depressed**—pieces of bone are pushed inward pressing on and sometimes causing tearing of brain tissue.

4) **Penetrated Skull**—objects such as bullets or knives may penetrate the skull and lodge in the brain—remember, do not remove foreign objects.

5) **Basal**—fractures of the base of the skull.

b. **Cerebrospinal Fluid**

1) The brain and spinal cord are protected by layers of tissue filled with a liquid called cerebrospinal fluid.

2) This fluid provides nutrition to some of the brain cells and serves as a shock absorber.

Indicate that strength may be determined by having patient squeeze rescuer's hand or by checking pressure against the foot.

Ask class member to identify and describe care for resultant shock.

Ask class members to describe airway maintenance for patients with spine injuries.

List on chalkboard.

3) Cerebrospinal fluid and blood may drain from the nose or ears when a person has a skull fracture.

4) Rule of care—do NOT attempt to stop bleeding from the nose or ears when a skull fracture is suspected. Doing so may cause increased pressure on the brain or an infection around the brain.

c. **Signs.** Signs of a skull fracture include:

1) Deformity of the skull.

2) Blood or clear fluid (cerebrospinal fluid) draining from ears or nose.

3) Black eyes.

2. **Injuries to the Brain**

a. **Concussion**—a temporary loss of function for some or all of the brain.

1) Patient may be confused or staggering or become totally unconscious and unable to breathe for a short period of time.

2) Patient has some loss of memory for events surrounding the accident.

b. **Contusion**—bleeding and abnormal swelling of brain tissue.

1) Patient may lose consciousness.

2) Paralysis may be present on one side of body or of all four limbs.

3) One pupil may dilate.

4) Vital signs may progressively deteriorate.

c. **Cerebral Hematoma**—blood clots causing pressure on brain tissues. Signs are the same as those for contusions.

3. **Emergency Care.** Care for patients with suspected head injuries require management of the injury as well as repeated evaluation over time. Procedures are:

a. Correct life-threatening problems—maintain respiration and circulation.

b. Suspect a cervical or other spine injury in vehicular accidents and falls.

c. Control bleeding—not drainage.

d. Dress and bandage open wounds—minimize pressure.

e. Position according to associated injuries:

1) Head elevation if possible (no pillows)—be prepared for vomiting.

2) On the side with head down if there is bleeding or mucous so that it can drain.

f. Protect patient from hurting himself if he convulses.

Monitoring the Unconscious Patient
(1:30) 0:10

1. **Special Management and Evaluation.** Unconscious patients need special management and constant evaluation from contact to delivery at the medical facility.

2. **Airway Suppport.** First and foremost is airway support. The semi-prone position should improve breathing.

3. **Bleeding Control.** The scalp may be compressed against the skull with the hand if there is no skull fracture. A pressure dressing and roller bandage should be applied.

4. **Cervical Spine Injury Evaluation.** Methods include:

a. Observe breathing for paralyzed chest muscles.

b. Starting with feet, prick patient lightly with pin and observe face for a grimace.

c. Observe positioning of arms.

d. Check blood pressure—it may be below 100 systolic without other signs of hypovolemic shock.

e. Observe male for possible penile erection.

5. **Maintaining Records**—neural watch chart. Baseline data and constant evaluation can aid hospital personnel in determining whether surgery may be required.

List on chalkboard.

List on chalkboard.

Ask a member of the class to describe airway care procedures.

Describe signs. Describe process and explain indications. Explain indications for spinal injury.

Refer to neural watch chart, describe data to be collected and how chart should be completed. Standardized forms such as Glasgow Coma Scale should be demonstrated if they are used in the area.

Time
(Elapsed)
Actual

Contents

Injuries to the Face and Neck
(1:40) 0:10

1. **Face and Scalp Wounds**
   a. **General Comments.** The face and scalp are richly supplied with arteries and veins, and wounds of these areas bleed heavily.
   b. **Emergency Care.** Control by direct pressure. For cheek wounds, it may be necessary to hold a gauze pad inside the cheek as well as outside.
   c. **Special Considerations**
      1) Suspect brain or neck injuries for any wounds of the head.
      2) Check the mouth carefully for any loose objects, such as broken teeth that might impair the airway.
      3) Check carefully for bleeding into the mouth or throat that might impair the airway.
      4) Cover exposed nerves, tendons, or blood vessels with a moist bandage.
2. **Facial Fractures**
   a. **Danger.** The main danger of facial fractures lies in airway problems. Bone fragments and blood may obstruct the airway—check the airway carefully.
   b. **Emergency Care.** Emergency care is the same as for soft tissue injuries, that is, maintain the airway, control bleeding, and dress and bandage open wounds.
3. **Neck Wounds**
   a. **Emergency Care**
      1) Control arterial bleeding by direct pressure.
      2) If a large vein is torn, apply pressure above and below the point of bleeding to prevent air from entering the circulatory system—the latter could be rapidly fatal.
   b. **Special Considerations.** Suspect a neck fracture.
4. **Laryngeal and Tracheal Injury**—the voice box and windpipe may be fractured.
   a. **Signs**
      1) Loss of voice.
      2) Severe airway obstruction—possibly fatal.
      3) Crackling sensation due to air leakage in soft tissue of neck.
   b. **Emergency Care.** The patient should be kept calm and breathing slowly. Oxygen should be administered.

Helmet Removal
(1:50) 0:10

1. May be necessary to properly immobilize or maintain airway.
2. Should be removed with caution.
3. One EMT maintains in line traction from below.
4. Straps loosened.
5. Second EMT assumes traction.
6. First EMT removes helmet, spreading at the ears.
7. First EMT replaces traction with more stable and conventional methods.

Ten-Minute Break
(2:00) 0:10

The Eye
(2:10) 0:30

1. **Design**—a globe.
   a. Vitreous humor
   b. Iris
   c. Pupil
   d. Cornea
   e. Sclera
   f. Conjunctiva
   g. Eyelids
   h. Tear Glands

If shock is present in the head injury patient it is usually not due to intracranial pathology.

Demonstrate.

Refer to illustration of the eye. Describe its parts and how they function to permit sight and protect the eye.

Time (Elapsed) Actual | **Contents**

2. **The Eye Is A Vital Sign.** Pupils can be:
   - a. Dilated
   - b. Constricted
   - c. Unequal
   - d. Fixed
3. **Injuries**
   - a. **Signs**
     - 1) Swollen or lacerated eyelids
     - 2) Bloodshot eyes
     - 3) Scratched cornea
   - b. **Foreign Bodies**
     - 1) Small foreign bodies can be removed by a cotton-tipped applicator. Small bodies on the cornea should not be removed.
     - 2) Impaled objects are not removed. Eye should be covered with a paper cup/cone or eye shield and bandaged. Both eyes should be covered to minimize movement.
   - c. **Burns**
     - 1) **Chemical Burns**—the eye should be copiously flushed with water before bandaging.
     - 2) **Burned Eyelids**—the eye should be covered with a sterile moist dressing.
     - 3) **Light Burns**—the eye should be covered with a sterile moist dressing.
   - d. **Lacerations and Contusions**—pressure may be applied except NEVER to the eyeball itself.
   - e. **Extruded Eyeball**—the eye should be gently covered with a moist dressing; do NOT replace eyeball.
   - f. **Blunt Trauma**—eye should be covered.

Demonstration and Practice: Immobilization of Spine Injuries
(2:40) 0:20

Note 1: Included here are procedures for immobilizing patients with suspected spine injuries on short and long backboards.

Note 2: Proficiency in these skills is not required in this lesson. Students will have additional opportunities to practice and demonstrate proficiency in these skills in Lessons 15 and 27.

1. **Short Backboard.** Procedures are:
   - a. Support patient's head until final application of device.
   - b. Apply cervical collar.
   - c. Position short backboard behind patient and pad the board as appropriate.
   - d. Attach straps to patient's forehead, chin, thighs and chest.
2. **Long Backboard**—Supine Patient. Procedures are:
   - a. Support patient's head until final application of device.
   - b. Apply cervical collar.
   - c. Straddle patient and lift shoulders slightly (board positioned at patient's head).
   - d. Shove board beneath patient.
   - e. Pad board as appropriate and secure straps.

   Note: The instructor should use the practice period not only for skill demonstration but also for emphasis of all lesson coverage required for students to achieve the lesson objectives.

(3:00)

Instructor's Notes

Ask class member how he would intepret the pupil sizes. Note that EMT should be alert for glass eyes.

Display applicator and describe procedures.

Demonstrate on student.

Describe causes, pain and seriousness of each burn type.

Refer to illustration of lacerated eye.

Refer to illustration of extruded eyeball.

Describe causes and signs.

Divide class into groups of 6.

Demonstrate and have students assist.

Demonstrate use of a blanket as a collar.

Demonstrate and have students assist.

Demonstrate use of blankets and sandbags.

Emphasize advantages of additional help.

Lesson 15

Practical Lab: Patient Assessment and Spine Immobilization

Objectives

At the conclusion of Lesson 15, the instructor will have provided sufficient information, demonstration, and practice to the student, to ensure his/her ability to:

- Demonstrate primary/secondary survey in both conscious and unconscious patient (to include neurocheck).
- Demonstrate how to open airway in patient with suspected neck injury.
- Demonstrate how to evaluate the neurological status of a conscious patient with a suspected spinal injury.
- Demonstrate how to evaluate the neurological status of an unconscious patient with suspected spinal injury.
- Demonstrate manual cervical traction.
- Demonstrate the application of three (one improvised) cervical immobilization devices.
- Demonstrate short spine board immobilization techniques.
- List steps in spinal cord injury management.
- Demonstrate 4-person lift for patient with suspected spinal injury.
- Demonstrate 4-person log roll for patient with suspected spinal injury.
- Demonstrate the application of a long spine board.
- Demonstrate how to "package" a patient with a suspected spinal injury to ensure no movement when turned/tipped.
- Demonstrate proper application techniques of spinal immobilization including: immobilization of joint above and below and immobilization of body, prior to head and neck, (immobilization with chin straps).
- Demonstrate helmet removal techniques.

Requirements

Equipment:

- Short backboard/straps (one for each six students).
- Long backboard/straps (one for each six students).
- Cervical collar (small, medium, large) (one for each six students).
- Towels (one for each two students).
- Safety helmet (one for each six students).
- Blankets (one for each two students).
- Makeup kit.

Instructor:

—One for each six students during practice session.

Instructor Preparation/Tasks

The Instructor Should:

- Review the lesson outline to assure understanding of contents and procedures.
- Be familiar with all visual aids and other equipment to be demonstrated during the lesson.
- Provide the student with ample practical experience to ensure his/her competency in the areas of treatment and immobilization of injuries described in Lesson 14.
- Brief all instructor aides as to their roles and responsibilities during the lesson.
- Prepare and brief patient for simulated patient program.

Time (Elapsed) Actual — **Contents**

Administrative Matters
(--) 0:05

1. Student attendance.
2. Announcements, etc.

Introduction
(0:05) 0:05

1. **Lesson Coverage**
   - a. Patient assessment.
   - b. Spinal injury recognition.
   - c. Immobilization of spine injury.
2. **Need for Lesson.** Failure to recognize an improper immobilization of spine injury may cause, paraplegia, quadraplegia or death.
3. **Lesson Objectives**
   - a. Demonstrate primary/secondary survey in both conscious and unconscious patient (to include neurocheck).
   - b. Demonstrate how to open airway in patient with suspected neck injury.
   - c. Demonstrate how to evaluate the neurological status of a conscious patient with suspected spinal injury.
   - d. Demonstrate how to evaluate the neurological status of an unconscious patient with suspected spinal injury.
   - e. Demonstrate manual cervical traction.
   - f. Demonstrate the application of three (one improvised) cervical immobilization devices.
   - g. Demonstrate short spine board immobilization techniques.
   - h. List steps in spinal cord injury management.
   - i. Demonstrate 4-person lift for patient with suspected spinal injury.
   - j. Demonstrate 4-person log roll for patient with suspected spinal injury.
   - k. Demonstrate the application of a long spine board.
   - l. Demonstrate how to "package" a patient with a suspected spinal injury to ensure no movement when turned/tipped.
   - m. Demonstrate helmet removal techniques.

Practice
(0:10) 2:40

1. Working in groups of six, each student should demonstrate:
   - a. Manual cervical traction.
   - b. The application of three (one improvised) cervical immobilization devices.
   - c. Short spine board immobilization techniques.
   - d. 4 person lift for patient with suspected spinal injury.
   - e. 4 person log roll for patient with suspected spine injury.
   - f. The application of a long spine board.
   - g. Packaging a patient so board can be turned onto side.
   - h. Helmet removal techniques.
2. Each student should complete a primary and secondary survey on one or more simulated patients and, as a minimum:
   - a. Demonstrate opening an airway when neck injuries are suspected.
   - b. Evaluate neurological status of a conscious patient with suspected spinal injury.
   - c. Evaluate the neurological status of an unconscious patient with suspected spinal injury.
   - d. List the steps in spinal cord injury management.

   NOTE: Same statement as new objectives.

Summary and Questions
(2:50) 0:10
(3:00)

1. Class questions or comments on the topic of the lesson.
2. Demonstration by selected class members of achievement of lesson objectives.

If new instructor, introduce self and instructor aides.

Review lesson coverage and objectives. Emphasize criticality of the skills covered.

Refer to lesson objectives in the Student Study Guide and review with class.

Instructor aides should closely monitor these activities using skills checklist.

Stress the importance of maintaining the integrity of the spine throughout the examination and treatment process.

Provide one 10-minute break during the practice session.

Question class members on selected objectives.

Lesson 16
Injuries to the Chest, Abdomen and Genitalia

Objectives

At the conclusion of Lesson 16, the instructor will have provided sufficient information, demonstration, and practice to the student, to ensure his/her ability to:

- List the boundaries of the (thoracic) chest cavity.
- List the contents of the chest (thoracic) cavity.
- List the two classifications of chest injuries.
- List four signs/symptoms and describe emergency treatment for:
  —pneumothorax
  —hemothorax
  —tension pneumothorax
  —pericardial tamponade
  —flail chest
  —subcutaneous emphysema
  —sucking chest wounds
  —traumatic asphyxia
- List the boundaries of the abdominal cavity.
- List the contents of the abdominal cavity.
- Describe complications/implications arising from injury to each abdominal organ.
- List 10 possible signs/symptoms of abdominal injury.
- Demonstrate assessment of patient with abdominal injury.
- Describe care of patient with abdominal evisceration.
- Describe care of patient with impaled object in abdomen.
- Describe care of patient with blunt abdominal injury.
- List external male genitalia.
- List external female genitalia.
- Describe emergency care of injuries to external male genitalia.
- Describe emergency are of injuries to external female genitalia.
- List local procedures for dealing with sexual assault victims.

Requirements

Material:

—Handout on local procedures for dealing with sexual assault victims.

Equipment: (one of each)

—35mm projector
—Movie screen
—Towel
—Trauma dressing
—Pillow
—Blanket
—Triangular bandage (2)
—4 × 4 gauze pads
—3″ Kling
—Chalkboard

Illustrations:

- Chart listing signs/symptoms of:
  —Pneumothorax
  —Hemothorax
  —Tension pneumothorax
  —Pericardial tamponade
  —Flail chest
  —Subcutaneous emphysema
  —Sucking chest wounds
  —Traumatic asphyxia
  —Chart listing signs/symptoms of injury to each abdominal organ.

Visual Aids:

- 35mm slides AAOS or similar

Instructor:

- One for lecture knowledgeable in all areas of subject matter in this lesson.

Instructor Preparation/ Tasks

The Instructor Should:

- Review the lesson outline to assure understanding of contents and procedures.
- Review and preview all references and visual aids selected for the lesson by the course administrator.
- Select and prepare appropriate instructional aids in addition to those provided by the course administrator; if desired.
- Be familiar with all visual aids and other equipment to be demonstrated during the lesson.
- Provide the student with a clear understanding of types of injuries, and proper treatment techniques for those injuries; in the area of the chest, abdomen and genitalia.

Time (Elapsed) Actual	Contents

Administrative Matters
(--) 0:05

1. Student attendance.
2. Announcements, etc.

Introduction
(0:05) 0:10

1. **Lesson Coverage**
2. **Need for Lesson**
3. **Lesson Objectives**
    a. List the boundaries of the (thoracic) chest cavity.
    b. List the contents of the chest (thoracic) cavity.
    c. List the two classifications of chest injuries.
    d. List four signs/symptoms and describe emergency treatment for:
        1) Pneumothorax
        2) Hemothorax
        3) Tension pneumothorax
        4) Pericardial tamponade
        5) Flail chest
        6) Subcutaneous emphysema
        7) Open Pneumothorax (sucking chest wound)
        8) Traumatic asphyxia
    e. List the boundaries of the abdominal cavity.
    f. List the contents of the abdominal cavity.
    g. Describe complications/implications arising from injury to each abdominal organ.
    h. List 10 possible signs/symptoms of abdominal injury.
    i. Demonstrate evaluation assessment of patient with abdominal injury.
    j. Describe care of patient with abdominal evisceration.
    k. Describe care of patient with impaled object in abdomen.
    l. Describe care of patient with blunt abdominal injury.
    m. List the components of the male external genitalia.
    n. List the components of the female external genitalia.
    o. Describe emergency care of injuries to external male genitalia.
    p. Describe emergency care of injuries to external female genitalia.
    q. List local procedures for dealing with sexual assault victims.

The Chest
(0:15) 1:00

1. **Design**
    a. The rib cage includes the ribs, the thoracic vertebrae, and the sternum.
    b. The ribs are connected to the vertebrae in back and all but two are connected to the sternum in front by cartilage.
    c. There is some movement of the rib cage associated with breathing.
    d. The rib cage encloses the lungs and heart, and damage to the ribs can result in damage to these organs.
2. **Injuries**
    a. **Signs**
        1) Pain at the site of injury
        2) Pain with breathing.
        3) Dyspnea.
        4) Failure of one or both sides of chest to expand normally with inspiration.
        5) Coughing up blood.
        6) Rapid weak pulse and low blood pressure.
        7) Cyanosis.

Instructor's Notes

If new instructor, introduce self and instructor aides.

Refer to illustration of thorax and ask class to identify skeletal parts and organs. Refer to torso with removable organs.

Describe causes and effects of open and closed wounds.

List on chalkboard.

Discuss reasons for the signs.

3. **General Principles of Care.** Major concern is to control bleeding and maintain breathing and adequate oxygen.

4. **Types of Injuries.** Injuries to the chest include rib fractures, penetrating injuries, and injuries to the internal chest organs (heart and lungs). All, of course, may occur together.

   a. **Rib Fractures**

      1) Common finding is localized pain.

      2) Simple fractures should not be bound, strapped or taped.

      3) With multiple fractures, the patient may be more comfortable with the arm strapped to the chest with a swathe.

   b. **Flail Chest**

      1) When each of three or more ribs is broken in two places, the resultant portion will not move with the rest of the rib cage when the patient attempts to breathe.

      2) Immobilizing the ribs may improve respirations.

      3) The EMT should be prepared to use resuscitative measures.

   c. **Penetrating Wounds**

      1) These consist of open chest wounds in which the chest wall is torn—typically by a foreign object.

      2) The wound must be closed quickly since it can result in air outside the lung in the chest cavity.

      3) They may cause sucking chest wounds, rib fractures or laceration of the heart or blood vessels of the chest.

   d. **Compression Injuries.** Compression can increase intrathoracic pressure, cause rib fractures, a flail chest, and traumatic asphyxia.

   e. **Injuries to the Back of the Chest.** Major concern is spine, intrathoracic or intrabdominal injury. Other than fractures, they are usually muscle strains and lacerations.

5. Results of Chest Injuries

   a. **Pneumothorax**—air enters the chest cavity through a sucking wound or leaks from a lacerated lung. The lung cannot expand.

   b. **Spontaneous Pneumothorax**—air leaks into the chest from a congenitally weak area in the lung surface and the lung collapses.

   c. **Tension Pneumothorax**—air continuously leaks out, the lung collapses completely. Pressure rises and the collapsed lung is forced against the heart and other lung. Release of a bandage on a chest wound may be effective in releasing tension.

   d. **Hemothorax**—blood leaks into the chest cavity from lacerated vessels or the lung itself and the lung compresses.

   e. **Open Pneumothorax**—air enters the chest cavity through an open wound. The wound must be closed immediately with an air-tight dressing. Aluminum foil, plastic wrap or any dressing may be used.

   f. **Subcutaneous Emphysema**—a fractured rib has fractured a lung. A crackling sensation is felt under the fingertips as one feels over the area of the fracture.

   g. **Traumatic Asphyxia**—severe compression puts pressure on heart and forces blood back into veins of the neck. It may also cause severe lung damage. This is a severe emergency.

   h. **Pericardial Tamponade**—blood or other fluid in the pericardial sac outside the heart exerts pressure on the heart.

   i. **Lacerations of the Great Vessels**—a major blood vessel is torn.

   j. **Traumatic Emphysema**—a sudden compression injury occurs when the glottis is closed; air sacs are ruptured and leak air.

Identify other possible signs, e.g., patient may lean toward injured side.

Demonstrate on student. Explain why adhesive plaster should not be used. Refer to illustration of a flail chest.

Emphasize seriousness of the condition.

List on chalkboard. Discuss causes, signs, dangers and techniques of care for each condition. Emphasize need for sealing wounds, providing respiratory support, monitoring vital signs and prompt transportation.

Explain how pressure in the chest changes. Demonstrate sealing a sucking chest wound with an occlusive dressing.

Time (Elapsed) Actual	Contents
Ten-Minute Break (1:15) 0:10	
The Abdomen and Genitalia (1:25) 1:00	1. **The Abdominal Cavity**

1. **The Abdominal Cavity**
    - a. Contents—major organs of digestion, excretion, female reproduction.
    - b. Boundaries.
    - c. Peritoneum and mesentery.
2. **Digestive System**
    - a. Function.
    - b. Location—Transcends boundaries of thorax and abdomen.
    - c. Contents.
        - 1) Mouth
        - 2) Salivary glands
        - 3) Pharynx
        - 4) Esophagus
        - 5) Stomach
        - 6) Pancreas
        - 7) Liver
        - 8) Gallbladder and bile ducts
        - 9) Small intestine
        - 10) Large intestine
        - 11) Appendix
        - 12) Rectum and anus
    - d. Spleen.
    - e. Peristalsis.
3. **Urinary System**
    - a. Functions.
    - b. Contents.
        - 1) Kidneys
        - 2) Ureter
        - 3) Urinary bladder and urethra
4. **Reproductive System**
    - a. Male
        - 1) Testicles
        - 2) Vasa deferentia
        - 3) Seminal vesicles
        - 4) Prostate gland
        - 5) Urethra
        - 6) Penis
    - b. Female
        - 1) Ovaries
        - 2) Fallopian tubes
        - 3) Uterus
        - 4) Vagina
5. **Injuries to the Abdomen**
    - a. **Types.** Injuries may be open or closed.
    - b. **Hollow and Solid Organs.** Abdomen contains both hollow and solid organs.
        - 1) Rupture of hollow organs (organs of the digestive system) spills contents into the peritoneal cavity causing inflammatory reaction.
        - 2) Rupture of solid organ (that is, the liver) may result in severe bleeding.
        - 3) Closed or open wounds may involve major blood vessels and be quickly fatal.

Refer to illustration of abdominal cavity and describe its design.

Refer to illustration of digestive system, identify contents, general design and function. Refer to torso with removable organs.

Refer to illustration of urinary system, identify contents, general design and function.

Refer to illustrations of male and female reproductive systems, identify contents, general design and function.

Give examples.

Give examples.

Give examples.

c. **Signs**

1) Patient will be still, usually with legs drawn up.
2) Breathing will be rapid and shallow.
3) Skin wounds and penetrations may be evident.
4) Pulse may be rapid and blood pressure low.
5) Patient may be nauseated and may vomit.
6) Organs may protrude.
7) Fractures may be evident.
8) There may be blood in the urine.

NOTE: Describe special dangers associated with safety belt injuries.

d. **Emergency Care**

1) For all abdominal injuries, suspect shock and work to prevent it.
2) Constantly monitor and evaluate vital signs.
3) Be alert for vomitus.
4) Do not remove penetrating objects.
5) Do not touch protruding organs. Cover them with a sterile dressing and keep the dressing moist or apply an occlusive dressing.

6. **Injuries to External Male Genitalia.**

a. **Types.** As with injuries to other body parts, there may be bruises, lacerations, penetrating objects and avulsions.

b. **Care.** Emergency care rules are essentially the same as those for all other bodily injuries, that is:

1) Control bleeding by direct pressure.
2) Cover with moist compresses.
3) Do not remove penetrating object.
4) Preserve avulsed parts.

7. **Injuries to Internal Female Genitalia.** These organs are rarely injured except in the pregnant female. Blunt injuries may rupture the uterus, cause loss of life of the fetus and severe hemorrhage.

8. **Injuries to External Female Genitalia.** The types and care for these injuries to other body parts and emergency care is the same. Nothing should be placed in the vagina.

Practice
(2:25) 0:35

1. Working in pairs, each student should practice dressing and bandaging.
   a. An open pneumothorax wound with multiple rib fractures.
   b. Flail chest.
   c. An evisceration.

2. Working on a fellow student, the student should perform a survey for life-threatening problems and a systematic survey for injuries. He should explain what he is doing, what he finds and the action he would take.

NOTE: The instructor should use the practice period not only for perfection of skills but also for emphasis of all lesson coverage required for students to achieve the lesson objectives.

NOTE: Students should be reminded that the next two lessons are practice, test and evaluation lessons.

(3:00)

Give reason for each sign. Indicate that abdomen may be rigid and tender. There may be referred pain.

Refer to illustration of protruding abdominal organs.

Ask a class member to review emergency care for injuries. Discuss local procedures for reporting and treating sexual assault cases.

Divide class into groups of 6. Provide a 10-minute break during the practice period. Monitor and critique each student. Permit students to practice. Complete proficiency is not expected here: Lesson 17 provides additional opportunity for practice. **NOTE:** The instructor may describe the initial patient condition and interject findings as the examination progresses. Programmed patients are highly recommended here.

Lesson 17
Practical Lab: Injuries

Objectives

At the conclusion of Lesson 17, the instructor will have provided sufficient information, demonstration, and practice to the student, to ensure his/her ability to do any or all of the following:

- Demonstrate the bandaging technique for an eye with an impaled object.
- Demonstrate bandaging techniques for scalp lacerations on top/side of head.
- Demonstrate how to open airway in patient with suspected neck injury.
- Demonstrate how to evaluate conscious patient with suspected spinal injury.
- Demonstrate proper cervical traction.
- Demonstrate proper application of three (one improvised) cervical immobilization devices.
- Demonstrate proper short spine board immobilization technique.
- List steps in proper spinal cord injury management.
- Demonstrate 4-person lift for patient with suspected spinal injury.
- Demonstrate 4-person log roll for patient with suspected spinal injury.
- Demonstrate proper application of long spine board.
- Demonstrate how to "package" a patient with a suspected spinal injury to ensure no movement when turned/tipped.
- Demonstrate proper helmet removal techniques.
- Demonstrate primary/secondary survey in both conscious and unconscious patients.
- Demonstrate proper application of pneumatic counter pressure device (MAST).
- Demonstrate application proficiency in use of the following splints:
  - Sling and swathe
  - Wire ladder splint
  - Traction splint
  - Air splint arm/leg
  - Padded board-pneumatic counter pressure device
  - Pillow splint
  - Improvised splint
- Demonstrate bandaging techniques for chest wounds.
- Demonstrate bandaging techniques of abdominal eviscerations.
- Demonstrate immobilization techniques for fractures/dislocations of:
  - Clavicle
  - Shoulder
  - Humerus
  - Elbow
  - Arm
  - Wrist/hand
  - Pelvis
  - Hip
  - Femur
  - Knee
  - Leg
  - Foot

Requirements

Equipment:

- Oval eye pad (one per student).
- Cotton tipped applicator (one per student).
- Paper cup (one per student).
- Contact removal kit (one for each two students).
- 4 × 4 gauze pads (two for each student).
- Triangular bandage (one for each student).
- 3" Kling (two per student).
- Trauma dressing (one per student).

- Wire ladder splint (one for each two students).
- Traction splint (one for each three students).
- Short backboard/straps (one for each six students).
- Long backboard/straps (one for each six students).
- Cervical collar (small, medium, large) (one for each six students).
- Sandbags (one per student).
- Towels (one per student).
- Safety helmet (one for each six students).
- Blanket (one for each two students).
- Pillow (one for each two students).
- Airsplint (arm and leg) (one for each three students).
- Padded board splints (assorted sizes) (one for each six students).
- Makeup kit.

Instructors:

—One for each four students during practice session.

Instructor Preparation/ Tasks

The Instructor Should:

- Review the lesson outline to assure understanding of contents and procedures.
- Be familiar with all visual aids and other equipment to be demonstrated during the lesson.
- Provide the student with ample practical experience to ensure his/her competency in treatment and immobilization techniques described in Lessons 10, 11, 12, 14 and 16.
- Brief all instructor aides as to their roles and responsibilities during the lesson.
- Prepare patients for simulated patient situations.

180

Time (Elapsed) Actual | **Contents**

Administrative Matters
(--) 0:05

1. Student attendance.
2. Announcements, etc.

Introduction
(0:05) 0:05

1. **Lesson coverage.**
   a. Practical application of wound care.
   b. Practical application of fracture care.
   c. Practical application of care for injuries to the head, face, eye, neck and spine.
   d. Practical application of care for injuries to the chest, abdomen and genitalia.
2. **Need for Lesson.** Practical application of the skills necessary to handle victims of trauma.
3. **Lesson Objectives.** At the end of each lesson, each student will be able to:
   a. Demonstrate the bandaging technique for an eye with an impaled object.
   b. Demonstrate bandaging techniques for scalp lacerations on top/side of head.
   c. Demonstrate how to open airway in patient with suspected neck injury.
   d. Demonstrate how to evaluate conscious patient with suspected spinal injury.
   e. Demonstrate how to evaluate unconscious patient with suspected spinal injury.
   f. Demonstrate proper cervical traction.
   g. Demonstrate proper application of three (one improvised) cervical immobilization devices.
   h. Demonstrate proper short spine board immobilization technique.
   i. List steps in proper spinal cord injury management.
   j. Demonstrate 4-person lift for patient with suspected spinal injury.
   k. Demonstrate 4-person log roll for patient with suspected spinal injury.
   l. Demonstrate proper application of long spine board.
   m. Demonstrate how to "package" a patient with a suspected spinal injury to ensure no movement when turned/tipped.
   n. Demonstrate proper helmet removal techniques.
   o. Demonstrate primary/secondary survey in both conscious and unconscious patients.
   p. Demonstrate proper application of pneumatic counter pressure device (MAST).
   q. Demonstrate application proficiency in use of the following splints:
      1) Sling and swathe.
      2) Wire ladder splint.
      3) Traction splint.
      4) Air splint (arm and leg).
      5) Padded board-pneumatic counter pressure device.
      6) Pillow splint.
      7) Improvised splint.
   r. Demonstrate immobilization techniques for fractures/dislocations of:
      1) Clavicle.
      2) Shoulder.
      3) Humerus.
      4) Elbow.
      5) Arm.
      6) Wrist/hand.
      7) Pelvis.
      8) Hip.
      9) Femur.
      10) Knee.
      11) Leg.
      12) Foot.

Instructor's Notes

If new instructor, introduce self and instructor aides.

Review lesson coverage and objectives.

Refer to lesson objectives in the Student Study Guide and review with class.

Time (Elapsed) Actual	**Contents**
Practice (0:10) 2:40	1. Working in groups of 4, each of the students should complete at least 60% of the objectives of the lesson. If time permits 100% completion is preferred. 2. Working in groups, each team should complete a primary and secondary survey, identifying all injuries and treating all injuries in two or more programmed patient situations.
Summary and Questions (2:50) 0:10	1. Class questions or comments on the topic of the lesson. 2. Demonstration by selected class members of achievement of lesson objectives.
(3:00)	

Instructor aides should closely monitor performance activities using skill checklists. The "lead" EMT should be alternated so each student can practice the primary and secondary survey.

The instructor should monitor and record performance using written checklists and provide constructive feedback on each performance.

Provide a ten-minute break at some point during this practice session.

Question class members on selected objectives.

Lesson 18
Test and Evaluation: Injuries

Objectives

The instructor will provide and administer a practical examination which allows the student to:

—Demonstrate mastery of knowledge objectives in Lessons 9, 10, 11, 12, 14 and 16 by achieving a score of 70% or higher on written test.

—Demonstrate knowledge of practical skills by performing selected representative skill objectives in Lessons 9, 10, 11, 12, 14 and 16.

NOTE: Lessons 13, 15 and 17 are not included as they are practice sessions where objectives are restated from previous lessons.

Requirements

Material: (one for each student)

—Written exam covering materials from Lessons 9, 10, 11, 12, 14 and 16.

Equipment: (Number of pieces of equipment are for a class of 25; if more or less, prorate accordingly).

- Penlights—5
- Stethoscopes—5
- Sphygmomanometers—5
- Thermometers—5
- Oropharyngeal airways—5
- Nasopharyngeal airways—5
- Portable suction units—2
- 4 × 4 gauze pads—100
- Universal dressings—25
- Roller bandages—25
- Adhesive tapes—10 rolls (2")
- Tourniquets—5
- Bandage scissors—5
- Chalkboard—1
- Oxygen equipment and delivery system—2
- Bag-valve-mask system—5
- Pocket mask/oxygen inlet valves—5
- Venturi masks—5
- Demand-valve resuscitators—2
- Appropriate quantities of lubricant jelly and gauze pads for ALL equipment.
- Self adherent bandages—5
- Occlusive dressings—5
- Triangular bandages—5
- Blankets—5
- Pillows—5
- Gauze roll (one for each student)
- Adhesive-type dressings (one for each student)
- Long air splint (one for each six students)
- Short air splint (one for each six students)
- Stick or similar object to simulate an impaled object (one for each six students)
- Padded arm splints (one for each two students)
- Padded leg splints (one for each two students)
- Air splint—leg—full and half (one for each six students)
- Cardboard/ladder/aluminum splints (one for each two students)
- Traction splint (one for each three students)

- Long backboard/straps (one for each six students)
- Pneumatic Counter Pressure Device (one for each six students)
- Oval eye pads
- Cotton tipped applicators
- Paper cups
- Contact removal kits
- 3" Kling
- Cervical collars (small, medium, large)
- Towels
- Trauma dressings
- Makeup kits

Instructor:

—One for monitoring classroom during written exam.

—One for each four students during practical exam.

NOTE: It is recommended that this lesson include three or four additional instructor aides to serve as patients during the evaluation of the skill of patient assessment. Each patient should simulate a different problem.

NOTE: If there are fewer instructors or less equipment than specified, additional time will be required for this lesson.

Instructor Preparation/ Tasks

The Instructor Should:

- Be familiar with all visual aides and other equipment to be demonstrated during the lesson.
- Provide the student with a fair evaluation of the knowledge gained in Lessons 9, 10, 11, 12, 14 and 16 by presenting and monitoring a written examination on this material.
- Provide the student with a fair skills evaluation by presenting a practical skills examination covering proficiencies gained in Lessons 9, 10, 11, 12, 14 and 16.
- Brief all instructor aides as to their roles and responsibilities during the lesson.
- Ensure that programmed patients are properly made up and briefed.

NOTE: Evaluation of Knowledge Objectives. It is assumed that instructors for individual lessons will assist the course coordinator in developing written test items for the lessons they teach. It will be the responsibility of the course coordinator to assemble a balanced test that is directed toward assessing whether or not the knowledge objectives of Lessons 9 through 16 have been achieved.

The instructor for the first part of this lesson serves largely as a monitor of the test itself. He should assure that he has sufficient copies of the test for each student and should review all procedures for completing the test so that he can explain these procedures correctly to the students.

NOTE: Evaluation of Skill Objectives. In order to assure that all students are evaluated in the same manner, the instructor should have a checklist on which he can check off the principal features of the skill to be evaluated. This checklist essentially comprises the student's evaluation sheet. It is assumed that the checklist will be prepared by the instructor and course administrator. To aid in designing checklists, the lesson plan identifies certain features of each skill. These may be refined into a list of steps. The resultant steps may not all be of equal weight in skill evaluation. The primary purpose of the checklist is to aid instructors in standardizing their evaluations of student performance. All instructors must be briefed on checklist use.

Detailed procedures are not specified for the lesson since they will vary depending on the number of students in the class, the number of instructors and the amount of material available. It is suggested that the instructors divide among themselves the skills to be evaluated. In effect, the lead instructor should set up test stations. He should also assure that all materials required for the lesson are available. It is strongly recommended that programmed patient situations be used and that a strong emphasis be placed on patient assessment.

All instructors should be thoroughly briefed on their responsibilities. Each instructor should review the lesson plans and references for Lessons 9 through 16 so that they are thoroughly knowledgeable about their contents.

Lesson 19
Medical Emergencies I

Objectives

At the conclusion of Lesson 19, the instructor will have provided sufficient information, demonstration, and practice to the student, to ensure his/her ability to:

- Define poison.
- List four ways for poison to enter body and give two examples of each.
- State how to contact nearest poison control center.
- List seven signs/symptons of poisoning.
- List the immediate steps in emergency care of poisoned patient.
- List three circumstances when vomiting should NOT be induced in patients suffering from ingested poison.
- State how to induce vomiting in adult patient.
- State how to induce vomiting in a child.
- State emergency care of unconscious victim of poisoning.
- List emergency care for victims of inhaled poison.
- List emergency care for victims of injected poison.
- List emergency care for victims of absorbed poison.
- List five signs/symptoms of patient suffering allergic reaction to an insect sting.
- State emergency care for a patient suffering allergic reaction to an insect sting.
- State physical characteristics of a pit viper and a coral snake.
- List four signs/symptoms of patient bitten by pit viper.
- List four signs/symptoms of patient bitten by coral snake.
- List emergency care for snake bites.
- List three examples of stinging marine animals.
- Describe emergency care for marine animal stings.
- List three examples of marine animals that can cause puncture wounds.
- Describe emergency care for puncture wounds from marine animals.
- Define atherosclerosis.
- Define myocardial infarction.
- List four risk factors associated with heart disease.
- List three causes of heart attack.
- Define angina pectoris.
- List signs/symptoms of angina.
- List signs/symptoms of heart attack.
- List the emergency care/treatment for angina.
- List the emergency care/treatment for MI.
- Define chronic congestive heart failure.
- List signs/symptoms of congestive heart failure.
- State the emergency care for congestive heart failure.
- Define stroke.
- List three causes of stroke.
- List seven signs/symptoms of stroke.
- Describe steps in treatment of stroke patients.
- List special considerations for treatment of stroke patients.
- Define dyspnea.
- Define pulmonary edema.
- Define chronic obstructive pulmonary disease.
- List three non-traumatic causes of dyspnea.
- List signs/symptoms of pulmonary edema.

- List signs/symptoms of COPD.
- Define hyperventilation.
- List signs/symptoms of hyperventilation.
- List steps in treatment of hyperventilation.
- Provide practice for objectives for lessons in CPR and mechanical aids to resuscitation.

Requirements

Equipment:

- Adult resuscitation manikin (one for each six students)
- Infant resuscitation manikin (one for each six students).
- Appropriate quantities of antiseptic solution and gauze pads.
- Oropharyngeal airways (one for each six students).
- Nasopharyngeal airways (one for each six students).
- Portable suction unit (one for each six students).
- Oxygen equipment—complete (one for each six students).
- Nasal cannula and mask (one set for each six students).
- Pocket mask with oxygen inlet valve (one for each six students).
- Venturi mask, partial and non re-breathing (one for each six students).
- Bag-valve-mask (one for each six students).
- 35mm projector.
- Movie screen.
- Chalkboard.

Visual Aids:

—35mm slides AAOS or similar.

Instructors:

—One for lecture knowledgeable in all areas of subject matter for this lecture.
—One for each six students during practice session.

Instructor Preparation/Tasks

The Instructor Should:

- Review the lesson outline to assure understanding of contents and procedures.
- Review and preview all references and visual aids selected for the lesson by the course administrator.
- Select and prepare appropriate instructional aids in addition to those provided by the course administrator; if desired.
- Be familiar with all visual aids and other equipment to be demonstrated during the lesson.
- Provide the student with a clear understanding of signs and symptoms relative to poisoning, heart attack, stroke, respiratory diseases and hyperventilation.
- Brief all instructor aides as to their roles and responsibilities during the lesson.

Instructor's Notes

Time (Elapsed) Actual | **Contents**

Administrative Matters
(--) 0:05

1. Student attendance.
2. Announcements, etc.

Review of Previous Lesson
(0:05) 0:20

1. Written test—Identify correct answers and common errors made in the written test administered in the previous lesson.
2. Practical examination—overall class performance and common errors made in demonstration of skills in the previous lesson.

Introduction
(0:25) 0:05

1. **Lesson Coverage.** This lesson provides for the following:
   - a. Review of the preceding test and evaluation lessons.
   - b. Causes, signs and emergency care for poisons, bites and stings, heart attack, stroke and dyspnea.
   - c. Additional practice on mechanical aids to airway care and CPR.
2. **Need For Lesson.** This lesson covers common medical conditions; severe cases can be life-threatening. The EMT should be able to recognize these conditions and render appropriate emergency care.

3. **Lesson Objectives**
   - a. Define poison.
   - b. List four ways for poison to enter body and give two examples of each.
   - c. State how to contact nearest poison control center.
   - d. List seven signs/symptoms of poisoning.
   - e. List the immediate steps in emergency care of poisoned patient.
   - f. List three circumstances when vomiting should NOT be induced in patients suffering from ingested poison.
   - g. State how to induce vomiting in adult patient.
   - h. State how to induce vomiting in a child.
   - i. State emergency care of unconscious victim of poisoning.
   - j. List emergency care for victims of inhaled poison.
   - k. List emergency care for victims of injected poison.
   - l. List emergency care of victims of absorbed poison.
   - m. List five signs/symptoms of patient suffering allergic reaction to an insect sting.
   - n. State emergency care for allergic reaction to insect sting.
   - o. List emergency care for snake bites.
   - p. List three examples of stinging marine animals.
   - q. Describe emergency care for marine animal stings.
   - r. List three examples of marine animals that can cause puncture wounds.
   - s. Describe emergency care for puncture wounds from marine animals.
   - t. Define atherosclerosis.
   - u. Define heart attack/MI.
   - v. List four risk factors associated with heart disease.
   - w. List three causes of heart attack.
   - x. Define angina pectoris.
   - y. List signs/symptoms of angina.
   - z. List signs/symptoms of heart attack.

Instructor's Notes

Note: The review portion of the lesson should be conducted by an individual knowledgeable about the previous test and evaluation session.

Distribute student tests. Review test pointing out correct answers and discussing common errors. Review overall performance and discuss types of errors made by class members.

Review lesson coverage and objectives. Emphasize importance of skills and knowledge covered.

Refer to lesson objectives in the Student Study Guide and review with class.

Time (Elapsed) Actual | **Contents**

aa. List the emergency care/treatment for MI.
bb. Define chronic congestive heart failure.
cc. List signs/symptoms of congestive heart failure.
dd. State the emergency care for congestive heart failure.
ee. Define strokes.
ff. List three causes of strokes.
gg. List seven signs/symptoms of stroke.
hh. Describe steps in treatment of stroke patients.
ii. List special considerations for treatment of stroke patients.
jj. Define dyspnea.
kk. Define pulmonary edema.
ll. Define chronic obstructive pulmonary disease.
mm. List three non-traumatic causes of dyspnea.
nn. List signs/symptoms of pulmonary edema.
oo. List signs/symptoms of COPD.
pp. List steps in treatment of pulmonary edema.
qq. List steps in treatment of COPD.
rr. Define hyperventilation.
ss. List signs/symptoms of hyperventilation.
tt. List steps in treatment of hyperventilation.
ww. Provide practice for objectives for lessons in CPR and mechanical aids to resuscitation.

Ingested Poisons
(0:30) 0:10

1. **Signs.** Signs are variable depending on the substances. There may be burns, odors or stains about the mouth. Other common signs include:
   a. Nausea/vomiting.
   b. Abdominal pain.
   c. Diarrhea.
   d. Dilation or constriction of pupils.
   e. Excessive salivation or sweating.
   f. Abnormal respiration.
   g. Unconsciousness.
   h. Convulsions.
2. **Emergency Care**
   a. The best treatment is to dilute the substance and induce vomiting. Dilution is accomplished with milk or water.
   b. Vomiting should NOT be induced when:
      1) Strong acids or alkalis are swallowed—they injure the esophagus when swallowed and will re-injure it if regurgitated.
      2) Petroleum products are swallowed—a serious pneumonia could result if aspirated into the lungs.
      3) Patient is not fully conscious or is convulsing—he might aspirate vomitus into the lungs.
   d. Vomiting is typically induced with syrup of ipecac.
   e. Activated charcoal may be a helpful absorbent after emesis.
   f. Soothing agents help to decrease gastrointestinal irritation.

If new instructor, introduce self and instructor aides.

Indicate typical causes. Note that alcohol and drugs will be covered in the next lesson.

Follow latest recommendatons of local Poison Control Center.

Explain procedures.

Explain procedures.

Describe its action and use with syrup of ipecac. Await emesis before activated charcoal. Identify agents.

Time (Elapsed) Actual | **Contents**

g. The poisonous substance should be located, if possible, and the Poison Control Center contacted to determine the most effective procedure.

h. Poisonous plants can cause severe reactions ranging from gastrointestinal disturbances to nervous system disorders and circulatory collapse. There are no antidotes for plant poisons. Severe cases need basic life support and speedy transport.

Inhaled Poisons
(0:40) 0:10

1. For inhaled poisons, such as carbon monoxide, the major concern is removing the patient from the source.
2. Oxygen and cardiopulmonary resuscitation should be administered as required.
3. Poison Control Center should be contacted.

Bites and Stings
(0:50) 0:10

1. **Bees, Wasps, Ants**
   a. The major danger arises when the person has a hypersensitive reaction.
   b. These reactions were discussed previously under the heading "anaphylactic shock".
   c. In addition to basic life support, the following should be done:
      1) Place a constricting band above an injury in an extremity.
      2) If present, carefully scrape stinger and venom sac away.
      3) Place an ice pack over the bitten area.
      4) May assist patient with medication if allowed by State and local protocol.
2. **Spiders**
   a. Death has rarely been reported.
   b. Severe cases should receive basic life support, application of a cold pack to the bite and immediate transport.
   c. Antivenoms are available for black widow and brown recluse spider bites, and identification of the insect is important.
3. **Snakes**
   a. Venomous species include the pit viper (rattlesnake, cottonmouth and copperhead) and coral snake. Coral snake is especially dangerous since it affects the central nervous system.
   b. Emergency care for pit vipers bites:
      1) Calm patient.
      2) Cleanse wound.
      3) Wrap soft rubber tubing about the extremity above and below fang marks to occlude ONLY superficial venous flow.
      4) Splint the extremity.
      5) Check vital signs.
      6) Prevent shock.
      7) Apply ice pack to the wound only if directed to do so directly by a physician or Poison Control Center.
      8) Incise wound and suction with a suction cup **ONLY IF** wound occurred within previous 30 minutes **IF** patient shows signs of envenomation, and **IF** directed to do so by a physician or Poison Control Center.

Instructor's Notes

Give name, address and telephone number of local Poison Control Center.

Emphasize importance of preserving evidence including vomitus.

Identify some typical poisonous plants and their reactions.

Ask class member to describe the signs and care for anaphylactic shock.

Give reason.

Give reason.

Describe typical signs.

Refer to illustration of black widow and brown recluse spiders and describe distinguishing features.

Refer to illustration of pit vipers and coral snakes and describe distinguishing features.

Describe typical signs.

Explain.

Time (Elapsed) Actual | **Contents**

c. Emergency care for coral snake is identical except that the constricting band is placed above the wound only and incisions and suction are not recommended.

Ten-Minute Break
(0:60) 0:10

Heart Attack
(1:10) 0:20

1. **Cardiac Function**
   a. Review anatomy and physiology of circulatory system, see Lessons 3 and 4.

   b. The heart is a muscle and, like all muscles in the body, is supplied with arteries.

   c. Arteriosclerosis is a disease process that can damage coronary arteries. It lays down deposits of fat which progressively narrow the artery.

   d. When an artery becomes blocked, that part of the muscle which it serves dies and the patient has what is known as myocardial infarction.

   e. The heart will still continue to pump even though part of the muscle dies. However, the attack usually occurs in the left ventricle which may be unable to pump all blood coming from the lungs. Fluid may accumulate in the lungs—a condition known as pulmonary edema.

   f. If too much muscle is lost, shock and sudden death will result.
2. **Myocardial Infarction**
   a. **Signs/Symptoms.** An acute myocardial infarction may have the following signs:
      1) Sudden onset of weakness, nausea and sweating without a clear cause.
      2) Pain—usually described as squeezing. It is substernal and perceived as radiating to the jaw, left arm or both arms. It is unrelated to exertion and not relieved by rest.
      3) Arrhythmia and fainting.
      4) Pulmonary edema.
      5) Tachycardia, Brachycardia.
      6) B.P. change.
      7) Sudden death.

   b. **Physical Findings**
      1) Pulse usually increases.
      2) Blood pressure falls.
      3) Respirations are normal unless pulmonary edema develops; then respirations are rapid and shallow.
      4) Patient appears frightened and may be sweaty and pale gray in color.

   c. **Emergency Care**
      1) Obviously, for cardiac arrest, CPR is performed.
      2) For patients suspected of having a heart attack:
         a) Place the patient in a semi-reclining position. (position of comfort).
         b) Administer high percent oxygen by face mask.
         c) Do not allow the patient to assit in moving himself.
         d) Comfort and reassure patient.
         e) Loosen patient's clothing.
         f) Prompt and efficient transport.
3. **Angina Pectoris**
   a. **Definition.** Angina is pain which occurs when the heart needs more oxygen than is available. It is usually brought on by stress or unusual effort.

   b. **Signs/Symptoms.** The patient suffers pain in the chest; it may radiate to the jaw or arms. It is felt as a pressure or squeezing sensation.

Describe typical signs.

Refer to illustration of a myocardial infarction.

Review how the ventricles function.

List on chalkboard.

Indicate that pain lasts 30 minutes to hours.

Note that fainting or pulmonary edema may be the first signs.

Note that occasionally the pulse slows.

Stress importance of not exciting the patient.

c. **Emergency Care**

1) Patients are usually aware of their condition and have been given medication (nitroglycerine) by their physician to relieve the pain—assist them in taking any prescribed medication.

2) Administer oxygen, place in position of comfort.

3) It is usually relieved by rest and lasts 3 to 8 minutes and rarely longer than 10 minutes.

4) Treat as a Myocardial Infarction.

4. **Congestive Heart Failure**

a. **Definition.** When the heart does not pump blood efficiently to the body, fresh blood cannot enter the heart from the lungs. Blood and other fluids accumulate in the lungs.

b. **Signs/Symptoms.** Signs include the following:

1) Shortness of breath.
2) Anxiety.
3) Rapid heart rate.
4) Rales or wheezing sounds.
5) Normal or somewhat high blood pressure.
6) Distended neck veins.

Note: It is possible to have heart failure with no chest pain.

c. **Emergency Care.** Emergency care for this patient is the same as that for heart attack patients.

Stroke
(1:30) 0:15

1. **CVA.** A stroke is also known as a cerebrovascular accident or CVA; it is an interruption of blood flow long enough to cause damage to the brain.

2. **Causes.** Part of the brain has been damaged due to a blood clot embolus or rupture of an artery. A clot may have formed elsewhere in the body and traveled to the brain as an embolus.

3. **Signs**

a. Numbness or paralysis of the extremities, often unilateral.
b. Confusion or dizziness.
c. Difficulty with speech or vision.
d. Diminished consciousness; coma.
e. Convulsions.
f. Headache alone.
g. Incontinence.

4. **Emergency Care.** Care will depend on the signs exhibited by the particular patient. Major consideration is calm treatment and careful handling, particularly of paralyzed parts. The airway must be monitored continuously.

Note: Even though the patient may not be able to speak and appears unconscious, he may be able to hear and understand what is being said—be careful what you say in front of such patients.

Dyspnea
(1:45) 0:15

1. **Dyspnea.** It is defined as a sensation of shortness of breath.

2. **Causes.** Causes may be medical or traumatic. Traumatic causes have been previously covered in the lesson on chest injuries.

3. **Medical Reasons.** Medical problems include:

a. Acute pulmonary edema—discussed under heart attack.

b. Airway obstruction by aspiration of vomitus or foreign objects—discussed previously.

Instructor's Notes

Ask student to identify resultant condition.

Identify types of care that may be required for stroke patients.

Time (Elapsed) Actual	Contents

c. Pulmonary diseases:
  1) Chronic obstructive lung disease (emphysema or chronic bronchitis).
  2) Asthma or allergic reactions.
c. Hyperventilation.

4. **Stimulus To Breathing**
  a. Main stimulus—level of carbon dioxide in the arterial blood.
  b. Secondary stimulus—low level of oxygen in the arterial blood.

5. **Chronic Obstructive Pulmonary Disease.**
  a. **Cause.** Severe pulmonary damage—respiratory center may be so depressed that the patient does not have a stimulus to breathe.
  b. **Signs**
    1) Respiratory distress—wheezing on expiration; difficult expiration; increased respiratory rate.
    2) Tension and anxiety.
    3) Blood pressure possibly slightly elevated.
    4) Cyanosis.
    5) Barrel chest.
  c. **Emergency Care**
    1) Reassure patient.
    2) Administer oxygen by venturi mask, or if unavailable, nasal cannula.
    3) Assist patient in taking his own medication.

7. **Hyperventilation**
  a. **Cause**—overbreathing usually due to psychological stress.
  b. **Signs**
    1) Anxiety—terrified of death.
    2) Dizziness and fainting.
    3) Numbness or tingling of hands and feet.
    4) Stabbing chest pain.
    5) Rapid breathing.
    6) High pulse rate.
  c. **Emergency Care.**
    1) Reassure patient.
    2) Ask patient to breathe into paper bag.

Practice
(2:00) 0:50

1. Symptom recognition and emergency care for:
  a. Ingested poison.
  b. Snake bite.
  c. Heart attack.
  d. Stroke.
  e. Anaphylactic shock.
  f. Acute emphysema attack.
  g. Acute asthmatic attack.
2. Each student should practice the following skills:
  a. Performing one-man cardiopulmonary resuscitation on an adult manikin for both a witnessed and unwitnessed cardiac arrest.
  b. Performing two-man cardiopulmonary resuscitation including changing positions during resuscitation.
  c. Performing cardiopulmonary resuscitation while manikin is being transported on a stretcher.
  d. Performing cardiopulmonary resuscitation on an infant manikin.

Explain how the main stimulus works and when secondary stimulus takes over.

Give typical reasons for the condition.

Stress the importance of adequate oxygenation of the patient.

Explain how a person can hyperventilate.

Use programmed patients for one or more of the following conditions. Ask the students to assess the condition and provide emergency care. The student should demonstrate his approach to the patient and history taking as appropriate.

Divide class into groups of 6.

202

Time (Elapsed) Actual	Contents
	e. Using the following equipment (including setting up and closing down equipment as appropriate): 1) Oropharyngeal airways. 2) Nasopharyngeal airways. 3) Portable suction unit. 4) Oxygen. 5) Oxygen delivery system—nasal cannula, face masks, mask and bag, and/or venturi mask. 6) Pocket mask with oxygen inlet valve. 7) Bag-valve-mask resuscitator with and without oxygen.
Summary and Questions (2:50) 0:10	1. Class questions or comments on the topic of the lesson. 2. Demonstration by selected class members of achievement of lesson objectives.
(3:00)	

Question class members on selected objectives.

204

Lesson 20
Medical Emergencies II

Objectives

At the conclusion of Lesson 20, the instructor will have provided sufficient information, demonstration, and practice to the student, to ensure his/her ability to:

- Define diabetes.
- Describe the purpose and function of insulin.
- List signs/symptoms of diabetic coma.
- List signs/symptoms of insulin shock.
- List steps in treatment of conscious diabetic patient.
- List steps in treatment of unconscious diabetic patient.
- Describe causes of insulin shock.
- Describe causes of diabetic coma.
- Define acute abdominal distress.
- List signs/symptoms of acute abdominal distress.
- List steps in the treatment of a patient with acute abdominal distress.
- List four special steps that should be used when examining a patient with acute abdominal distress.
- List three ways a communicable disease can be transmitted.
- List steps EMT's can take to lessen personal exposure to a communicable disease.
- List steps EMT's must take in the maintenance of the emergency vehicle post-exposure to a communicable disease.
- List six signs/symptoms of a patient who has abused chemical substances.
- List the general treatment procedures to be taken when caring for substance abuse patients.
- Define seizure.
- Define convulsion.
- List steps in the emergency care of a patient during and post seizure/convulsion.
- Describe the treatment for status epilepticus.
- Demonstrate obstructed airway maneuvers in infants to AHA standards.
- Demonstrate infant rescue breathing according to AHA standards.
- Demonstrate infant CPR according to AHA standards.
- List signs/symptoms of croup and epiglottitis.
- List steps in treatment of croup/epiglottitis.
- State normal vital signs in children.
  - —Newborn
  - —1 year
  - —3 years
  - —6 years
- List steps in managing fevers in children.
- List steps in treating child victim of ingested poisoning.

Requirements

Equipment:

—35mm projector
—Movie screen
— Chalkboard
— Infant resuscitation manikin

Visual Aids:

—35mm slides AAOS or similar.

Instructors: (One for each six students during practice session).

—One for lecture knowledgeable in all areas of subject matter for this lesson.

Instructor Preparation/ Tasks

The Instructor Should:

- Review the lesson outline to assure understanding of contents and procedures.
- Review and preview all references and visual aids selected for the lesson by the course administrator.

- Select and prepare appropriate instructional aids in addition to those provided by the course administrator; if desired.
- Be familiar with all visual aids and other equipment to be demonstrated during the lesson.
- Provide the student with a clear understanding of signs and symptoms relative to patients with diabetic coma, insulin shock, acute abdomen, seizures and communicable diseases.
- Provide the student with a clear understanding of medical emergencies unique to or occurring most often in, the pediatric patient.
- Brief all instructor aides as to their roles and responsibilities during the lesson.

Time (Elapsed) Actual | **Contents**

Administrative Matters
(--) 0:05

1. Student attendance.
2. Announcements, etc.

Introduction
(0:05) 0:05

1. **Lesson Coverage.** The lesson discusses the causes, signs and emergency care for diabetic conditions, the acute abdomen, communicable diseases, the disturbed and unruly, alcohol and drug abuse and epilepsy. It also reviews common problems and techniques of care for the child patient.

2. **Need for Lesson.** This lesson covers common medical conditions; severe cases can be life-threatening. The EMT should be able to recognize these conditions and render appropriate emergency care.

3. **Lesson Objectives**
   a. Define diabetes.
   b. Describe the purpose and function of insulin.
   c. List signs/symptoms of diabetic coma.
   d. List signs/symptoms of insulin shock.
   e. List steps in treatment of conscious diabetic patient.
   f. List steps in treatment of unconscious diabetic patient.
   g. Describe causes of insulin shock.
   h. Describe causes of diabetic coma.
   i. Define acute abdominal distress.
   j. List signs/symptoms of an acute abdominal distress.
   k. List steps in the treatment of a patient with an acute abdominal distress.
   l. List four special steps that should be used when examining an acute abdominal distress.
   m. List three ways a communicable disease can be transmitted.
   n. List steps EMT's can take to lessen personal exposure to a communicable disease.
   o. List steps EMT-A's must take in the maintenance of the emergency vehicle post exposure to a communicable disease.
   p. List six signs/symptoms of a patient who has abused chemical substances.
   q. List the general treatment procedures to be taken when caring for substance abuse patients.
   r. Define seizure.
   s. Define convulsion.
   t. List steps in the emergency care of a patient during and post seizure/convulsion.
   u. Describe the treatment for status epilepticus.
   v. Demonstrate obstructed airway maneuvers in infants to AHA standards.
   w. Demonstrate infant rescue breathing according to AHA standards.
   x. Demonstrate infant CPR according to AHA standards.
   y. List signs/symptoms of croup and epiglottitus.
   z. List steps in treatment of croup and epiglottitus.
   aa. State normal vital signs in children:
      —Newborn —3 years
      —1 year —6 years
   bb. List steps in managing fevers in children.
   cc. List steps in treating child victim of ingested poisoning.

If new instructor, introduce self and instructor aides.

Review lesson coverage and objectives. Emphasize importance of skills and knowledge covered.

Refer to lesson objectives in the Student Study Guide and review with class.

Discuss importance of checking for emergency medical identification symbol.

Time
(Elapsed)
Actual

Contents

Diabetes
(0:10) 0:15

1. **The Condition**
   a. Diabetes is a condition in which the body is unable to use sugar normally.
   b. Body cells need sugar to survive.
   c. Insulin in the body permits sugar to pass from the bloodstream to body cells.
   d. If there is not enough insulin, sugar will be unable to get to body cells and they will starve.
   e. If there is too much insulin, there will be insufficient sugar in the bloodstream and brain cells will be damaged since they need a constant supply of sugar.
2. **Diabetic Coma**
   a. **Problem.** There is insufficient insulin and therefore too much sugar in the blood and not enough in the body cells. The diabetic:
      1) Has eaten too much food that contains or produces sugar, and/or
      2) Has not taken his insulin.
   b. **Signs.** The diabetic may have some or all of the following signs:
      1) A sweet or fruity (acetone) odor.
      2) Rapid, weak pulse.
      3) Air hunger—rapid, deep breathing.
      4) Varying degrees of unresponsiveness, up to coma.
      5) Normal or slightly low blood pressure.
      NOTE: The onset of diabetic coma is gradual.
   c. **Emergency Care.** Take patient immediately to a medical facility.
3. **Insulin Shock**
   a. **Problem.** There is too much insulin in the body; therefore, the sugar leaves the blood rapidly and there is insufficient sugar for the brain cells. The diabetic:
      1) Has taken too much insulin, or
      2) Has not eaten enough food, or
      3) Has exercised excessively.
   b. **Signs.** Signs include the following:
      1) Full, rapid pulse.
      2) Normal breathing.
      3) Dizziness; headache.
      4) Fainting; seizures; disorientation; coma.
      5) Normal blood pressure.
      NOTE: The onset of insulin shock is sudden; it may occur within minutes.

   c. **Emergency Care.** The patient desperately needs sugar before brain damage and death occur. Sugar in any form can be given to a conscious patient. Take conscious or unconscious patient immediately to a medical facility.

   NOTE: If the rescuer can't distinguish between diabetic coma and insulin shock and sugar is available, have the conscious patient take it. It can't appreciably hurt the patient in diabetic coma and may save the life of a patient in insulin shock. Transport unconscious patients without delay.

Acute Abdominal Distress
(0:25) 0:10

1. **Definition.** Irritation or inflammation of the peritoneum.
2. **Signs.**
   a. Abdominal pain, local or diffuse.
   b. Abdominal tenderness, local or diffuse.
   c. Patient is quiet and reluctant to move.
   d. Rapid shallow breathing.
   e. Rapid pulse.
   f. Low blood pressure.
   g. Tense, often distended stomach.
   h. Position of the patient.

Instructor's Notes

List on chalkboard.

Discuss difficulty of diagnosis.

Note that the potential for airway compromise and aspiration do not warrant giving sugar orally to the unconscious patient.

Identify typical causes.

Explain reason for each sign.

3. **Special Examination Procedures**
   - a. Determine whether the patient is restless or quiet and whether movement causes pain.
   - b. Feel the abdomen gently to see if it is tense or soft.
   - c. Determine whether the patient can relax the abdominal wall on command.
   - d. Determine whether the abdomen is tender when touched.
4. **Emergency Care.** The patient needs speedy transportation to a medical facility. Care includes:
   - a. Keep airway clear.
   - b. Administer oxygen if necessary.
   - c. No liquids or food.
   - d. No medication.
   - e. Position patient comfortably.
   - f. Prevent shock and manage as appropriate.

Communicable Diseases
(0:35) 0:15

1. **Common Communicable Diseases**
   - a. Chicken pox.
   - b. Diphtheria.
   - c. German measles.
   - d. Gonorrhea.
   - e. Malaria.
   - f. Measles.
   - g. Meningitis.
   - h. Mononucleosis.
   - i. Mumps
   - j. Pneumonia.
   - k. Poliomyelitis.
   - l. Rocky Mountain spotted fever.
   - m. Smallpox.
   - n. Scarlet fever.
   - o. Syphilis.
   - p. Tuberculosis.
   - q. Typhoid fever.
   - r. Whooping cough.
2. **Communicable Diseases Transmitted By:**
   - a. Direct contact.
   - b. Indirect contact.
   - c. Inhalation.
3. **Procedures**
   - a. If nature of call is known in advance:
     - 1) Wear disposable gown and mask.
     - 2) Remove all unnecessary equipment from the vehicle.
     - 3) Use as much disposable equipment as possible.
   - b. Upon return:
     - 1) Boil clothing.
     - 2) Wash hands.
     - 3) Shower.
     - 4) If exposed to:
       - a) Smallpox re-vaccination.
       - b) Diptheria immunization.
       - c) Meningitis check with physician.
       - d) Syphilis—check with physician if bitten or scratched.
       - e) Follow prescribed procedures for sanitizing and decontaminating the vehicle and its equipment.
         - i. air.
         - ii. scrub.
         - iii. disinfect.

Emphasize importance of recording signs and symptoms and patient's description of his condition.

BRIEFLY describe typical characteristics and mode of transmission of SOME of the common communicable diseases.

Identify types of equipment.

Follow latest medical recommendations.

213

iv. boil.
v. burn.

NOTE: The EMT should protect himself by having yearly physicals and making sure his vaccinations are up to date.

Ten-Minute Break
(0:50) 0:10

Substance Abuse
(1:00) 0:30

1. **Alcohol Effects.** Alcohol is a depressant that affects a person's judgement, vision, reaction time and coordination. In very large quantities, it can cause death by paralyzing the respiratory center in the brain.
2. **Signs**
   - a. Odor of alcohol on breath.
   - b. Swaying/unsteadiness.
   - c. Slurred speech.
   - d. Nausea/vomiting.
   - e. Flushed face.
3. **Caution**
   - a. These signs can mean illnesses or injuries other than alcohol (e.g., epilepsy, diabetes, head injury).
   - b. It is therefore especially important that the person with alcohol on his breath (which can smell like the acetone breath of a diabetic) not be immediately dismissed as a drunk.
   - c. He should be carefully checked for other illnesses/injuries.
4. **Alcohol Combines With Other Depressants.** When alcohol is taken in combination with analgesics, tranquilizers, antihistamines, barbiturates, etc., the depressant effects will be added together and, in some instances, the resultant effect will be greater than the expected combined effects of the two drugs.
5. **Management**
   - a. The intoxicated patient should be given the same attention given to patients with other illnesses/injuries.
   - b. The intoxicated patient needs constant watching to be sure that he doesn't aspirate vomitus and that he maintains respirations.
6. **Withdrawal Problems**
   - a. An alcoholic who suddenly stops drinking can suffer from severe withdrawal problems.
   - b. Sudden withdrawal will often result in DT's (delirium tremens).
   - c. Signs include:
     - 1) Shaking hands.
     - 2) Restlessness.
     - 3) Confusion.
     - 4) Hallucinations.
     - 5) Sometimes disruptive behavior.
   - d. The patient must be protected from hurting himself.

1. **Drugs: Types**
   - a. **Uppers**—Stimulants of the central nervous system. They include amphetamines, cocaine, caffeine, anti-asthmatic drugs and vasoconstrictor drugs.
   - b. **Downers**—depressants of the central nervous system. They include barbiturates, tranquilizers, marijuana, inhaled solvents and opiates.
   - c. **Hallucinogens**—they include LSD, mescaline, psilocybin and peyote. Marijuana also has some hallucinogenic properties.

Instructor's Notes

Onset of DT's will occur several days after cessation of alcohol. DT's have a high mortality rate.

2. **Amphetamines and Cocaine**
   - a. Amphetamines include Benzedrine and Dexedrine.
   - b. Amphetamines and cocaine provide relief from fatigue and a feeling of well-being.
   - c. Blood pressure, breathing and general body activity are increased.
   - d. Some users take a "speed run" of repeated high doses. Results are hyperactivity, restlessness and belligerence. Such persons need to be protected from from hurting themselves and others. Acute cases need medical attention.
   - e. At the end of a "speed run", the user is left exhausted and sleeps. On awakening, he is depressed.
   - f. Respiratory failure can occur with cocaine.
3. **Hallucinogens**
   - a. These drugs include LSD, mescaline, morning glory seeds, etc.
   - b. They produce changes in mood and sensory awareness; a person may "hear" colors and "see" sounds.
   - c. They can cause hallucinations and disruptive behavior that can make the user dangerous to himself and others.
   - d. Acute cases need medical attention. Patients should be protected from hurting themselves.
4. **Marijuana**
   - a. Marijuana provides a feeling of relaxation and euphoria.
   - b. Users report distortions of time and space.
   - c. In some persons, excessive use can result in a reaction similar to a bad LSD trip.
5. **Barbiturates**
   - a. Barbiturates include Nembutal, Amobarbital, Seconal and Phenobarbital.
   - b. These drugs result in relaxation, drowsiness and sleep.
   - c. Overdoses can produce respiratory depression, coma and death.
   - d. Withdrawal can cause anxiety, tremors, nausea, fever, delirium, convulsions and ultimate fatality.
6. **Tranquilizers**
   - a. Tranquilizers include Miltown, Equanil and Valium.
   - b. They are used to calm anxiety.
   - c. High doses produce the same effects as barbiturates.
   - d. Withdrawal can cause the addict problems similar to those occurring from withdrawal from barbiturates.
7. **Inhaled Solvents**
   - a. A person who inhales glue or other solvents (gasoline, lighter fluid, nail polish, etc.) experience effects similar to those of alcohol.
   - b. He can die through suffocation.
   - c. In addition, some inhalants can cause death by changing the rhythm of the heartbeat.
8. **Opiates (Narcotics)**
   - a. Opiates include opium, morphine, heroin, codeine, paregoric and Demerol.
   - b. They are used medicinally to relieve pain and anxiety.
   - c. Overdoses can result in deep sleep (coma), respiratory depression, and death.
   - d. The pupils of opiate users are described as "pin-point" in size.
   - e. Withdrawal symptoms include, among others, intense agitation, abdominal discomfort, dilated pupils, increased breathing and body temperatures and a strong craving for a "fix".

Time (Elapsed) Actual — **Contents**

9. **Summary Comments Regarding Care**
    - a. Vomiting should be induced if the overdose was taken in the preceding 30 minutes.
    - b. Hyperactive patients should be protected from hurting themselves and others. They should be reassured and treated calmly.
    - c. Level of consciousness should be monitored and recorded.
    - d. Respirations should be carefully monitored since overdoses of depressants can cause respiratory depression and death.
    - e. The EMT-A should instill confidence. The patient should be assured that he will be all right.
    - f. The EMT-A should be alert for possible allergic reactions and shock.
    - g. Evidence should be preserved.
    - h. Prompt transportation should be provided.

Epilepsy
(1:30) 0:10

1. **Definitions**
    - a. Convulsion—a violent involuntary contraction or series of contractions, of the skeletal muscles.
    - b. Seizures—the convulsive manifestation of epilepsy.
2. **Types**
    - a. Grant Mal—major seizure.
    - b. Petit Mal—minor seizure, no unconsciousness.
3. **Grand Mal Seizure**
    - a. The patient convulses due to a sudden abnormal stimulation of brain cells.
    - b. Convulsions are clonic-tonic.
    - c. The convulsions are usually followed by unconsciousness called a postictal state.
4. **Status Epilepticus**
    - a. Continuous seizure activity without regaining consciousness.
    - b. Transport immediately.
5. **Emergency Care**
    - a. The major requirement of the rescuer is to protect the patient from hurting himself during a seizure.
    - b. The epileptic should not be physically restrained in any way unless he is endangering his own welfare.
    - c. Move objects, not the patient.
    - d. He may need to be transported to a medical facility when the seizure is over.
    - e. Do not force foreign objects into patient's mouth during seizure.

Problems of Child Patients
(1:40) 0:20

1. **General Comment.** Techniques of care for children are essentially the same as those for adults with some variations being necessary due to size. For example, the following have already been discussed:
    - a. Airway obstruction.
    - b. Oxygen.
    - c. Pulmonary resuscitation.
    - d. Cardiopulmonary resuscitation.
    - e. Bleeding and shock. (Little blood loss is required for the infant or small child to go into shock).
    - f. Head, neck and spine injuries.
    - g. Chest injuries.
    - h. Fractures and soft-tissue injuries.

Describe local rules pertaining to care of alcohol or drug abuse patients. Describe exceptions to inducing vomiting.

Identify possible causes.

Nasopharyngeal airway may be used under certain circumstances.

Explain that, since they have been covered in this or other course lessons, emergency care procedures will not be repeated here.

219

i. Abdominal injuries and pain.
j. Poisonings. (Small children are the most common victims of poisoning).
k) Contagious diseases.

2. **Approach**

a. There are special problems in dealing with children since they are apt to be afraid or unable to communicate, for example:

1) **Fear**
   - a) Of the accident scene—confusion, noise, cries of the injured, view of injured, particularly if injured are parents.
   - b) Of their own injuries, blood, pain.
   - c) Of strangers—therefore, they will fear the emergency medical technician and the care he/she provides.
   - d) Of being confined, as in splints.
   - e) Of being trapped, as in vehicles, wells, cave-ins.
   - f) Of being separated from parents.

2) **Inability to Communicate**
   - a) Too young to communicate verbally.
   - b) Too frightened to communicate.
   - c) Too young to understand what has happened.

b. The EMT-A should be reassuring, calm and understanding with child patients. He should:

1) Use simple language and a soft voice.
2) Be very gentle in feeling for injuries.

3. **Special Problems**

a. **Fever.** A child with an unusually high fever should be cooled before and during transport.

b. **Convulsions.** Convulsions are common in young children and are frequently associated with fever. The convulsing child needs to be protected from injuring himself.

c. **Croup and Epiglottitus.** Partial airway obstruction which develops over a long period of time. Do not use obstructed airway maneuvers, administer humidified oxygen and transport immediately.

d. **Sudden Infant Death Syndrome.** Death usually occurs during sleep in an apparently healthy baby. The EMT will encounter anguished parents and should endeavor to assist the baby by administering CPR.

1) 6-7,000 deaths annually.
2) Leading cause of death in infants less than a year old.
3) Occurs with no prior life-threatening event.
4) Emergency care:
   - a) CPR unless death is certain.
   - b) Transport infant.
   - c) Support family.

e. **Child Abuse.** The EMT should be alert to indications of child abuse and report suspicions to medical and other appropriate personnel.

f. **Sexual Abuse.** Children of both sexes are subject to sexual molestation. The patient should not be examined unless there is obvious bleeding that requires control. The patient should not wash, urinate or defecate.

Describe procedures.

Explain causes and procedures.

Describe typical incident. Psychological aspects of SIDS, child abuse and sexual abuse are covered in Lesson 24.

Review indications and local reporting requirements and procedures.

Emphasize importance of having a calm professional manner. Review local reporting requirements and procedures.

g. **Poisoning.** Common in children. Treatment procedures are the same as an adult, except ipecac dose is reduced to 1 tablespoon. Follow the recommendations of the Poison Control Center.

Vital Sign Ranges

1. **Blood pressure:**

Ages	Mean Systolic		Mean Diastolic
Neonates	80	/	46
6-12 Months	89	/	60
1 year	96	/	66
2 years	98	/	64
6 years	100	/	56
12 years	114	/	60

2. **Pulse Rate:**

Age	Pulse Rates
Neonates	110-150
12 Months	100-140
2 years	90-110
6 years	80-100
10 years	70-110

3. **Respiratory Rate:**

Age	Respiratory Rate
Neonates	30-50
2 years	20-30
10 years	14-22
Adolescent	12-20

Practice
(2:00) 0:50

1. Each student should practice infant CPR procedures including obstructed airway maneuvers.
2. Working in pairs, each student should have the opportunity to complete a primary and secondary survey on a pediatric patient.

Summary and Questions
(2:50) 0:10
(3:00)

1. Class questions or comments on the topic of the lesson.
2. Demonstration by selected class members of achievement of lesson objectives.

Instructor's Notes

Some supervision is required here although it is assumed that students should have maintained proficiency in these procedures.

Older children may be made up to simulate injuries. Make certain that children have been well briefed as to what is going to happen.

Question class members on selected objectives.

223

Lesson 21
Emergency Childbirth

Objectives

At the conclusion of Lesson 21, the instructor will have provided sufficient information, demonstration, and practice to the student, to ensure his/her ability to:

- Identify on a diagram the following:
  - — Uterus
  - — Cervix
  - — Vagina
  - — Fetus
  - — Placenta
  - — Umbilical cord
  - — Amniotic sac
  - — Perineum
- Define:
  - — Miscarriage/abortion
  - — Bloody show
  - — Crowning
  - — Three stages of labor
  - — Presenting part
- List and state purpose of emergency OB kit.
- List pre-delivery emergencies and state their emergency care.
- List three indications of an imminent delivery.
- List steps involved in pre-delivery preparation of mother.
- List steps to assist in the delivery.
- Describe (demonstrate) care of baby as soon as head appears.
- Demonstrate infant resuscitation procedures (including use of oxygen).
- Describe how/when to cut cord.
- List steps to assist in delivery of placenta.
- List steps in the care of mother post delivery.
- List special considerations for multiple births.
- Define premature baby and describe special considerations for care of.
- Describe/demonstrate procedures for:
  - — Breech birth.
  - — Prolapsed cord.
  - — Arm/leg presentation.
  - — List steps in care of mother with excessive bleeding.

Requirements

Equipment:

- Obstetrical manikin (one for each six students).
- Sterile delivery pack (one for each six students).
- Infant resuscitation manikin (one for each six students).
- Oxygen and delivery system (one for each six students).
- Premature infant carrier (one for each six students).
- 35mm projector.
- 16mm projector.
- Chalkboard.
- Movie screen.

Visual Aids:

—35mm slides AAOS or similar.

—16mm film—"Emergency Obstetrics" or other film showing a live birth and proper delivery procedures.

Instructors:

—One for lecture knowledgeable in all areas of subject matter in this lesson.

—One for each six students during practice session.

Instructor Preparation/ Tasks

The Instructor Should:

- Review the lesson outline to assure understanding of contents and procedures.
- Review and preview all references and visual aids selected for the lesson by the course administrator.
- Select and prepare appropriate instructional aids in addition to those provided by the course administrator; if desired.
- Be familiar with all visual aids and other equipment to be demonstrated during the lesson.
- Provide the student with a clear understanding of all phases of a delivery including his/her function in both normal and abnormal births.
- Brief all instructor aides as to their roles and responsibilities during the lesson.

Administrative Matters
(--) 0:05

1. Student attendance.
2. Announcements, etc.

Introduction
(0:05) 0:05

1. **Lesson Coverage.** The lesson covers normal and abnormal births and provides for students to practice skills in assisting in deliveries and caring for the mother and the newborn.
2. **Need for Lesson.** A childbirth can be an emergency event and knowledge of appropriate procedures will permit better care of both patient and baby.
3. **Lesson Objectives**
   a. Identify on a diagram the following:
      1) Uterus
      2) Cervix
      3) Vagina
      4) Fetus
      5) Placenta
      6) Umbilical cord
      7) Amniotic sac
      8) Perineum
   b. Define:
      1) Miscarriage/abortion
      2) Bloody show
      3) Crowning
      4) Three stages of labor
      5) Presenting part
   c. List the contents of an emergency OB kit.
   d. List pre-delivery emergencies and state their emergency care.
   e. List three indications of an imminent delivery.
   f. List steps involved in pre-delivery preparation of mother.
   g. List steps to assist in the delivery.
   h. Describe (demonstrate) care of baby as soon as head appears.
   i. Demonstrate infant resuscitation procedures (including use of oxygen).
   j. Describe how/when to cut cord.
   k. List steps to assist in delivery of placenta.
   l. List steps in the care of mother post delivery.
   m. List special considerations for multiple births.
   n. Define premature baby and describe special considerations for care of.
   o. Describe/demonstrate procedures for:
      1) Breech birth
      2) Prolapsed cord
      3) Arm/leg presentation
   p. List steps in care of mother with excessive bleeding.

Relevant Anatomy, Physiology and Terms
(0:10) 0:15

1. **Fetus**—Developing unborn baby.
2. **Uterus**—Organ in which the fetus grows.
3. **Birth Canal**—Vagina and lower part of the uterus.
4. **Placenta (Afterbirth)**—Organ through which baby exchanges nourishment and waste products during pregnancy.
5. **Umbilical cord**—Cord through which infant receives nourishment.
6. **Amniotic Sac** (bag of water)—The sac that surrounds the baby inside the uterus.
7. **Cervix**—Lowest part of the uterus.
8. **Vagina**—Lower part of the birth canal.
9. **Perineum**—Skin area between vagina and anus.

Instructor's Notes

If new instructor, introduce self and instructor aides.

Review lesson coverage and objectives. Emphasize importance of skills and knowledge covered.

Refer to lesson objectives in the Student Study Guide and review with class.

Refer to illustrations of the abdominal cavity of the pregnant and non-pregnant female and define each term.

Time (Elapsed) Actual — **Contents**

10. **Crowning**—The bulging-out of the vagina opening as the baby's head presses against it.
11. **"Bloody Show"**—Mucous and blood that come out of the vagina as labor begins.
12. **Labor**—Muscles of uterus open the birth canal and push the baby down through it.
    a. **First Stage**—Start of contractions to opening of cervix.
    b. **Second Stage**—Opening of cervix to birth of baby.
    c. **Third Stage**—Birth of baby to delivery of placenta.
13. **Presenting Part**—The part of the baby that comes out first—usually the head.
14. **Abortion**—Miscarriage.
15. **Live Birth Certificate**—A certificate that live birth has occurred.
16. **Fetal Death Certificate**—A certificate for a stillborn baby.

Sterile Delivery Pack
(0:25) 0:05

1. Surgical scissors.
2. Three hemostats or cord clamps.
3. Umbilical tape or sterilized cord.
4. Ear syringe, rubber-bulb type.
5. Four towels.
6. One dozen 4 × 4 gauze sponges.
7. Three or four pairs of rubber gloves.
8. One baby blanket.
9. Sanitary napkins.
10. Two large plastic bags.

Predelivery Emergencies
(0:30) 0:05

1. **Convulsions.** (From epilepsy or toxemia).
    a. Place mother on side.
    b. Upon regaining consciousness, elevate shoulders and head.
    c. Give oxygen.
2. **Heart/Lung Complications**—Give oxygen.
3. **Hemorrhage**
    a. Do NOT examine vaginally.
    b. Administer oxygen.
    c. Maintain body temperature.
    d. Encourage mother to lie on her side.
    e. Pneumatic Counter Pressure Device may be used (legs only) if indicated.
4. **Automobile Accidents**—Follow general principles of emergency care.

Initial Considerations
(0:35) 0:05

1. It is generally best to transport the mother unless the delivery is expected in a few minutes.
2. To determine when delivery is expected ask:
    a. Has the mother had a baby before?
    b. Does she feel she has to strain or move her bowels?
    c. Is the vagina bulging or is baby crowning?
3. Precautions:
    a. Look, do not touch.
    b. Do not let mother go to bathroom.
    c. Do not hold mother's legs together.

Ten-Minute Break
(0:40) 0:10

Film-Emergency Obstetrics (or similar)
(0:50) 0:20

1. The film shows an actual childbirth and means of caring for mother and baby.

Instructor's Notes

Refer to illustration of crowning.

Give local definition.

Describe local requirements.

Describe local requirements.

Display and describe use of each item in the delivery pack.

Explain reasons for each action.

Give implications of answers to each question.

Explain.

Show and critique film.

Time (Elapsed) Actual	Contents

Demonstration and Practice
(1:10) 1:35

1. **Normal Delivery.** Procedures are:
   a. Have mother lie with knees drawn up and spread apart. If in automobile, have mother place one foot on the floorboard.
   b. Place sheet, blanket, or newspaper under buttocks to lift them about 2 inches off the surface.
   c. Fold sterile towel and place under buttocks.
   d. Place another sterile towel on patient's abdomen and one on surface below opening of vagina.
   e. When the baby's head appears, place the fingers of the gloved hand on its head and exert VERY GENTLE pressure.
   f. If the amniotic sac does not break, use clamp to puncture sac and push sac away from baby's mouth and nose.
   g. When the head is born, check if umbilical cord is around neck; slip over shoulder or clamp, cut and unwrap.
   h. Place hand under baby's head for support and suction baby's mouth two or three times and each nostril once.
   i. As the abdomen and hips are born, place the other hand under those parts—there are now two hands supporting the baby.
   j. When feet are born, grasp feet.
   k. Wipe blood and mucous from mouth and nose with a sterile gauze, suction mouth and nose again.
   l. Wrap baby in a blanket and place on its side, head slightly lower than trunk.
   m. Clamp, tie and cut umbilical cord.
   n.. Massage uterus.
   o. Observe mother for delivery of placenta—few to 30 minutes; if over 20 minutes, transport. If heavy bleeding, transport. Massage uterus, administer oxygen, place sterile pad over vagina.
   p. When delivered, wrap placenta in towel and put in plastic bag; 1/2 pint blood normal. Place sterile pad over vaginal opening, lower mother's legs, help her hold them together.
   q. Record time of delivery and transport mother, baby and placenta to hospital.

   NOTE: If baby does not deliver after 20 minutes of contractions every 2 to 3 minutes, transport immediately.
2. **Resuscitation of the Newborn.** Procedures are:
   a. Suction airway as previously described.
   b. Lay baby on side, head lower than body.
   c. Snap index finger against bottom of feet; if no response:
   d. Apply GENTLE mouth-to-mouth/nose resuscitation.
   e. Continue resuscitation until breathing starts; then oxygen.
   f. Initiate cardiopulmonary resuscitation if no pulse after two minutes.
   g. Continue cardiopulmonary resuscitation until baby breathes or is pronounced dead by a physician.
3. **Breech Delivery.** Procedures are:
   a. Make same preparations as for normal delivery.
   b. Allow buttocks and trunk to deliver spontaneously.
   c. Support legs and trunk.
   d. Allow head to deliver spontaneously.
   e. If head does not deliver in three minutes, transport immediately. Do not pull baby out. Provide airway.
   f. After head delivers, continue as in normal birth.

Instructor's Notes

Divide class into groups of 6. Using an obstetrical manikin, demonstrate and have class practice each procedure.

Give reason.

Give reason.

Remind class that baby is slippery.

Explain the need to suction nasal air passage.

Demonstrate grasp.

Demonstrate and have class practice. Describe stillborn and baptismal procedures.

Ask class members to describe procedures.

Ask class members to describe procedures.

Demonstrate and have class practice.

232

Demonstrate and explain procedures.

Time (Elapsed) Actual	Contents

g. If only foot or arm protrudes, transport to hospital immediately.

4. **Prolapsed Cord.** Procedures are:
    a. Put mother in shock position—legs elevated, give oxygen, keep mother warm, have her legs and hips elevated.
    b. Wrap a sterile towel around the visible portion of the cord. Do not replace or put pressure on cord. The baby may have to be supported to relieve pressure on the cord.
    c. Transport immediately.
5. **Excessive Bleeding** (more than five soaked pads). Procedures are:
    a. Prevent shock.
    b. Pneumatic Counter Pressure Device may be useful.
    c. Place sterile sanitary napkin at opening of vagina; save blood-filled pads.
    d. Do not hold legs together or put hand or anything in vagina.
    e. Preserve any tissue passed.
    f. Transport immediately.
6. **Abortion** (Miscarriage). Procedures are:
    a. Prevent shock.
    b. Pneumatic Counter Pressure Device may be useful.
    c. Immediately transport.
    d. Save any passed tissue.
7. **Multiple Birth**—procedures are the same as for single births.
8. **Premature Infant**
    a. **Characteristics**—usually thinner, small and redder than a full-term baby with a relatively large head.
    b. **Care.**
        1) Keep the baby warm.
        2) Keep the mouth and throat clear of fluid and mucous.
        3) Ensure cord does not bleed.
        4) Administer oxygen.
        5) Don't infect infant.
        6) Alert hospital.
9. **Premature Infant Carrier.** Procedures are:
    a. Fill hot water bottles, cover and place in carrier.
    b. Wrap infant in blanket or napkin.
    c. Make sure carrier is secure in ambulance.

NOTE: The instructor should use the practice period not only for perfection of skills but also for emphasis of all lesson coverage required for students to achieve the lesson objectives.

Summary and Questions
(2:45) 0:15

1. Class questions or comments on the topic of the lesson.
2. Demonstration by selected class members of achievement of lesson objectives.

(3:00)

Instructor's Notes

Demonstrate proper procedures.

Describe symptoms.

Describe signs of multiple birth and procedures for delivery.

Demonstrate and have class practice.

Display and demonstrate use of carrier. Have members of class assist.

Question class members on selected objectives.

Lesson 22
Burns and Hazardous Materials

Objectives

At the conclusion of Lesson 22, the instructor will have provided sufficient information, demonstration, and practice to the student, to ensure his/her ability to:

- List two functions of skin.
- Define and state two characteristics each of 1st degree, 2nd degree, and 3rd degree burns.
- Demonstrate knowledge of rules of 9's by dividing picture of human body into appropriate areas.
- List three examples of a critical/severe burn.
- List three examples of a moderate burn.
- List two examples of a minor burn.
- List three steps in management of chemical burns.
- List precautions to take at scene of electrical burn.
- List steps in treatment of electrical burn.
- State the local agency responsible for handling nuclear wastes to be contacted in case of accidents involving nuclear radiation.
- State how exposure to radiation affects severity of burns.
- List seven steps to manage emergency scene involving hazardous materials.

Requirements

Equipment:

- Geiger counter.
- Protective clothing and self-contained breathing apparatus.
- 35mm projector.
- 16mm projector.
- Chalkboard.
- Movie screen.

Visual Aids:

- 35mm slides AAOS or similar.
- 16mm film—"Hazardous Materials Emergency Response" or similar.
- Hazardous materials: Emergency Response Guidebook. (DOT)
- Hazardous materials: Sample placards. (DOT)

Instructors:

—One for lecture knowledgeable in all areas of subject matter in this lesson.

Instructor Preparation/Tasks

The Instructor Should:

- Review the lesson outline to assure understanding of contents and procedures.
- Review and preview all references and visual aids selected for the lesson by the course administrator.
- Select and prepare appropriate instructional aids in addition to those provided by the course administrator; if desired.
- Be familiar with all visual aids and other equipment to be demonstrated during the lesson.
- Provide the student with a clear understanding of categorizing and treating all classes of burn injuries.
- Provide the student with a clear understanding of radiation and hazardous materials scenes, and how to identify and function in these situations.
- Provide the student with a clear understanding of radiation and hazardous materials scares, and how to identify and function in these situations.

Time (Elapsed) Actual	**Contents**

Administrative Matters
(--) 0:05

1. Student attendance.
2. Announcements, etc.

Introduction
(0:05) 0:05

1. **Lesson Coverage**
   a. Heat, chemical, electrical and radiation burns.
   b. Exposure to hazardous materials.

2. **Need For Lesson.** Proper management of patients suffering from burns, exposure to cold and water hazards can save lives as well as limbs and minimize suffering.

3. **Lesson Objectives**
   a. List two functions of skin.
   b. Define and state two characteristics each of 1st degree, 2nd degree, and 3rd degree burns.
   c. Demonstrate knowledge of rule of 9's by dividing picture of human body into appropriate areas.
   d. List three examples of a critical/severe burn.
   e. List three examples of a moderate burn.
   f. List two examples of a minor burn.
   g. List three steps in management of chemical burns.
   h. List precautions to take at scene of electrical burn.
   i. List steps in treatment of electrical burn.
   j. State the local agency responsible for handling nuclear wastes to be contacted in case of accidents involving nuclear radiation.
   k. State how exposure to radiation affects severity of burns.
   l. List seven steps to manage emergency scene involving hazardous materials.

Burns
(0:10) 0:40

1. **Classification.** Burns are classified by degree of damage to the skin.
   a. **First-Degree Burns.** In a first-degree burn, only the top layer of skin is burned and the skin becomes reddened.
   b. **Second-Degree Burns.** In a second-degree burn there is some damage to the dermis and characteristically the skin blisters.
   c. **Third-Degree Burns.** In a third-degree burn the entire thickness of the skin is burned down to the subcutaneous fat.
      1) The skin usually is dry, pale or white but may be brown or even charred.
      2) There is a loss of sensation in the area due to a destruction of nerve endings.

2. **Rule of Nines.** The rule of nines provides a means of estimating the percentage of the body that is burned as follows:

	Adult	**Infant**
a. Head	9%	18.0%
b. Arms	9% ea.	9.0% ea.
c. Torso front	18%	18.0%
d. Torso back	18%	18.0%
e. Genitalia	1%	1.0%
f. Legs	18% ea.	13.5% ea.
	100%	100.0%

3. **Criticality.** The degree of seriousness of a burn can be estimated from the following:
   a. Degree of the burn.

If new instructor, introduce self.

Review lesson coverage and objectives. Emphasize importance of knowledge covered.

Refer to lesson objectives in the Student Study Guide and review with class.

Refer to illustration of 1st, 2nd and 3rd degree burns. Ask class members to identify and describe each layer of skin as it is mentioned.

Refer to illustration of rules of nines for adults and infants.

b. Percentage of body burned.

c. Location of the burn.

d. Accompanying complications.

e. Age of patient.

Note: The general condition of the patient must also be considered. For example, a moderate burn in an aged or critically ill person might be serious.

4. **Critical Burns.** The following burns are considered critical:

   a. Burns complicated by respiratory tract injuries and other major injuries or fractures.

   b. Third-degree burns involving the critical areas of the face, hands, feet and genitalia.

   c. Third-degree burns covering more than 10% of the body surface.

   d. Second-degree burns covering more than 30% of the body surface.

5. **Moderate Burns**

   a. Third-degree burns of 2 to 10% of the body surface excluding face, hands, feet and genitalia.

   b. Second-degree burns of 15 to 30% of the body surface.

   c. First-degree burns of 50 to 75% of the body surface.

6. **Student Exercise**

7. **Management**

   a. Stop burning process. Remove smoldering clothing.

   b. The burned area should be covered with a clean dressing.

   c. Administer oxygen.

   Note: NEVER use grease (e.g., butter, lard, vaseline) on a burn.

8. **Chemical Burns.** For chemical burns, the patient needs speedy access to water.

   a. With the exception of lime (which may be brushed off the skin), chemicals in contact with the skin should be washed off with copious amounts of water as clothing is being removed.

   b. For chemicals in the eye, the rescuer may need to hold the patient's eye open for him and rinsing should continue throughout transport.

9. **Electrical Burns**

   a. Electrical burns can be more serious than they appear since they can penetrate the skin deeply; the burn commonly enters in one place and leaves the body in another, so that there are two wounds.

   b. The major problem with electrical burns is respiratory and cardiac arrest.

   c. If there are fallen wires or other electrical hazards, the power company or appropriate rescue group should be summoned immediately.

   d. Unless the power company says the power is off, it should be assumed that it is on even though street lights are off.

   e. Patients should be told to STAY IN THE VEHICLE.

   f. If there is a fire, they must jump from the vehicle (a child could be thrown from the vehicle). They must not make contact with the vehicle and ground simultaneously.

Ten-Minute Break
(0:50) 0:10

Instructor's Notes

Give the students several examples and have them estimate whether the burns described are critical.

For minor 1st and 2nd degree burns, immerse the burned part in water for 2 to 5 minutes if possible.

Discuss use of neutralizing agents.

Emphasize role and safety of the EMT.

This is a very dangerous maneuver and should only be encouraged when fire or explosion threatens the patient's life.

Burns (Continued)
(1:00) 0:20

10. **Radiation Burns**
    a. Radiation burns may be nuclear or solar. Since solar burns are basically sunburns, they should be treated as any other first or second degree burn. The remainder of the session will therefore be devoted to nuclear burns.
    b. Radiation is a form of energy transmission.
    c. Ionizing radiation (alpha, beta and gamma rays) affects the body cells.
        1) Alpha and beta particles are dangerous only if swallowed or inhaled—they damage internal organs.
        2) Gamma rays are very penetrating and dangerous.
    d. Amount of radiation damage depends on:
        1) Strength of the source.
        2) Type of radiation exposure.
        3) Duration of exposure.
        4) Area of body affected.
        5) Distance between person and source.
        6) Shielding between person and source.
    e. Regulations of the Interstate Commerce Commission require specific packaging and labeling of radioactive materials.
    f. **Emergency Care**
        1) If a hazardous radiation level exists, the patient should be removed from the area as quickly as possible even if some of the rules of initial emergency care are violated.
        2) If there is reason to suspect that there are radioactive materials on the patient's or rescuer's clothes, they should be removed at the edge of the exposed area and disposed of in labeled metal containers with tight lids.
        3) Both EMT-A and patient should shower.
        4) Standard decontamination procedures should be followed for EMT-A, patient and ambulance. The hospital should be notified.

Hazardous Materials
(1:20) 0:40

1. Common problem.
    a. Extent unknown.
    b. More likely than radiation exposure.
2. Safety is the primary concern.
    a. EMT-A.
    b. Public.
    c. Patient.
3. Resources.
    a. **CHEMTREC** 1-800-424-9300
    b. Hazardous Materials: Emergency Response Guidebook (DOT P5800.3) (1984)
    c. State and local agencies.
4. Identification.
    a. Placards, 4 digit number.
    b. Shipping paper, 4 digit number or name.
5. General procedures.
    a. Keep unnecessary people away.
    b. Stay upwind, safe distance.
    c. Isolate the area.
        1) Keep people out.
        2) Do not enter until fully protected with suit and self-contained breathing apparatus.
    d. Avoid contact with material.
    e. Remove patient to safe zone.

List on chalkbord. Display Geiger counter and explain how it is used to measure rate of radiation.

Refer to illustration of ICC identification for radioactive materials. Emphasize means by which EMT-A can minimize his exposure.

Identify local regulatory body for radioactive material.

Identify local and State agencies available to assist with hazardous material incidents.

Display placards and shipping papers.

Time (Elapsed) Actual	**Contents**
	f. Institute CPR and give oxygen as indicated. Treat major injuries. g. If material contact has occurred, flush with water for at least 15 minutes. h. Remove and isolate contaminated material. i. Decontaminate self, equipment and ambulance as directed.
Ten-Minute Break (2:00) 0:10	
Practice (2:10) 0:40	1. Working in groups of six, students should become familiar with Geiger counters if they are used in the service area. 2. Working in groups of six, the students should demonstrate proficiency in wearing protective clothing and in the use of self-contained breathing apparatus, if they are used in the service area.
Summary and Questions (2:50) 0:10	1. Class questions or comments on the topic of the lesson. 2. Demonstration by selected class members of achievement of lesson objectives.
(3:00)	

Stress importance of safety of the EMT-A in response to hazardous material situations.

Question class members on selected objectives.

Lesson 23
Environmental Emergencies

Objectives

At the conclusion of Lesson 23, the instructor will have provided sufficient information, demonstration, and practice to the student, to ensure his/her ability to:

- List two signs/symptoms of heat cramps.
- List steps in emergency care of heat cramps.
- List three signs/symptoms of heat exhaustion.
- List steps in emergency care of heat exhaustion.
- List three signs/symptoms of heat stroke.
- List steps in emergency care of heat stroke.
- List and define five ways the body loses heat.
- Define hypothermia.
- List five signs/symptoms of hypothermia.
- List three steps in emergency treatment of a hypothermic patient when transport time is less than 30 mintues from a medical facility.
- List three steps in emergency treatment of a hypothermic patient when transport time is greater than 30 minutes from a medical facility.
- List signs/symptoms of frostbite.
- List circumstances when frostbite should not be thawed outside of a medical facility.
- State the temperature at which water should be maintained when thawing frostbitten parts.
- List steps in emergency treatment of a drowning victim.
- List five steps in care of patients with suspected diving-related problem(s).
- Define air embolism (from diving).
- Define decompression sickness.
- State how to contact nearest recompression chamber.

Requirements

Equipment:

- 35mm projector.
- Movie screen.
- Chalkboard.
- Low temperature thermometer.

Visual Aids:

—35mm slides AAOS or similar.

Instructors:

—One for lecture knowledgeable in all areas of subject matter in this lesson.

Instructor Preparation/ Tasks

The Instructor Should:

- Review the lesson outline to assure understanding of contents and procedures.
- Review and preview all references and visual aids selected for the lesson by the course administrator.
- Select and prepare appropriate instructional aids in addition to those provided by the course administrator; if desired.
- Be familiar with all visual aids and other equipment to be demonstrated during the lesson.
- Provide the student with a clear understanding of signs, symptoms and treatment of heat exposure and cold exposure injuries.
- Provide the student with a clear understanding of his/her responsibilities in dealing with a drowning victim.

Time (Elapsed) Actual — **Contents**

Administrative Matters
(--) 0:05

1. Student attendance.
2. Announcements, etc.

Introduction
(0:05) 0:05

1. **Lesson Coverage**
   a. Exposure to heat-related emergencies.
   b. Exposure to cold-related emergencies.
   c. Exposure to water-related emergencies.
2. **Need for Lesson.** Environmental factors may complicate treatment, exacerbate injuries and endanger the EMT-A.
3. **Lesson Objectives**
   a. List two signs/symptoms of heat cramps.
   b. List steps in emergency care of heat cramps.
   c. List three signs/symptoms of heat exhaustion.
   d. List steps in emergency care of heat exhaustion.
   e. List three signs/symptoms of heat stroke.
   f. List steps in emergency care of heat stroke.
   g. List and define five ways the body loses heat.
   h. Define hypothermia.
   i. List five signs/symptoms of hypothermia.
   j. List three steps in emergency treatment of a hypothermic patient when transport time is less than 30 minutes from medical facility.
   k. List three steps in emergency treatment of hypothermic patient when transport time is greater than 30 minutes from a medical facility.
   l. Define frostbite.
   m. List signs/symptoms of frostbite.
   n. List circumstances when frostbite should not be thawed outside of a medical facility.
   o. State the temperature at which water should be maintained when thawing frostbitten parts.
   p. List steps in emergency treatment of a drowning victim.
   q. List five steps in care of patients with suspected diving related problem(s).
   r. Define air embolism (from diving).
   s. Define decompression sickness.
   t. State how to contact nearest recompression chamber.

Exposure to Heat
(0:10) 0:35

1. **Heat Cramps**
   a. A patient may suffer painful muscle spasms in the extremities after strenuous exercise.
   b. The cramps will usually be relieved if the patient takes a salt solution.
2. **Heat Exhaustion**
   a. This is the most common illness caused by heat.
   b. The patient is usually weak, dizzy or faint, has a headache, no appetite and nausea. Vital signs are usually normal. He may appear gray and skin may be cold and clammy.
   c. It occurs when patient works hard in a hot environment.
   d. Muscles and heart need increased blood flow as does the skin.
   e. The patient should be treated as if he were in shock and should be transported to a medical facility as soon as possible.

Instructor's Notes

If new instructor, introduce self and instructor aides.

Review lesson coverage and objectives. Emphasize importance of skills and knowledge covered.

Refer to lesson objectives in Student Study Guide and review with class.

Explain body water-salt balance.

Ask class member why skin needs increased blood.

246

f. One liter of ½ strength electrolite solution may be provided if the patient is conscious.

3. **Heat Stroke**
   - a. In heat stroke, the patient's sweating mechanism has broken down and he is unable to lose body heat through the skin.
   - b. Important signs are:
     - 1) Very hot, dry skin.
     - 2) Coma or a progressive degeneration of responsiveness.
     - 3) Very high body temperature.
   - c. This condition is a true emergency. If body temperature rises too high, brain cells can be injured and the patient may die.
   - d. The body should be cooled in any way possible (e.g., cold towels, air from a fan) while the patient is transported to a medical facility where they will likely give the patient an ice-water bath to lower the temperature.

Exposure to Cold
(1:00) 0:50

1. **Heat Regulation.** There are five major ways in which the body loses heat:
   - a. Conduction.
   - b. Convection.
   - c. Evaporation.
   - d. Respiration.
   - e. Radiation.
2. **General Cooling of the Body** (Hypothermia).
   - a. Exposure to cold, snow or ice can result in a general cooling of the body that can go through the following five stages:
     - 1) Shivering—an attempt by the body to generate heat (does not occur below 35 degrees F).
     - 2) Decreased muscle function first, fine motor, then gross motor.
     - 3) Decreased level of consciousness.
     - 4) Decreased vital signs, slow pulse and slow respiration rate.
     - 5) Apparent death.
   - b. **Emergency Care.** This is an acute emergency requiring immediate medical attention. Emergency care includes:
     - 1) If less than 30 minutes from medical facility:
       - a) prevent further heat loss.
       - b) handle with care.
       - c) added heated oxygen.
       - d) transport.
     - 2) If more than 30 minutes from a medical facility:
       - a) prevent further heat loss.
       - b) handle with care.
       - c) add heated oxygen.
       - d) rewarm patient.
       - e) prepare for CPR.
       - f) transport.
     - 3) Always monitor respirations and pulse and provide pulmonary and cardiopulmonary resuscitation as required. Resuscitate all hypothermia patients. No one is dead until warm and dead.
3. **Local Cooling of the Body**
   - a. **The Condition**

Identify typical patient who suffers from heat stroke.

Give examples of each.

Rough handling may precipitate ventricular fibrillation.

Explain local method preferences for pre-hospital rewarming of hypothermia patients.

1) When the body is subjected to excessive cold, the water in the cells will freeze; the resulting ice crystals may even destroy the cells.

2) It may be minor (frostnip), superficial, or deep.

Note: NEVER rub any condition of frostbite; the ice crystals in the tissue can cut and destroy cells.

b. **Frostnip**

1) There is a sudden blanching of the skin—the patient is usually unaware of it.

2) The skin can be warmed by applying firm pressure with a hand (no rubbing) or other warm body part or by blowing hot breath on the spot.

c. **Superficial Frostbite**

1) The skin is white and waxy; it is firm to the touch but the tissue beneath is soft and resilient.

2) Treatment includes providing dry coverage and steady warmth.

d. **Deep Frostbite or Freezing**

1) The skin is white and feels hard throughout.

2) This patient needs immediate hospital care. He should be kept warm and resuscitated as necessary.

e. **Treatment**

1) Rewarm by immersion in water 105 degrees (F), 40.6 degrees (C).

2) Administer oxygen.

3) Maintain core body temperature.

4) Transport.

Note: Do not delay transport for rewarming.

Ten-Minute Break
(1:50) 0:10

Near Drowning
(2:00) 0:30

1. **Condition**

a. In most drownings, little water enters the lungs since a laryngeal spasm occurs when foreign material is introduced into the larynx.

2. **Rescue and Patient Management**

a. Direct swimming rescue should be attempted only by personnel trained in lifesaving. Instead, floatable items should be thrown or pushed to the victim.

b. Immediate pulmonary resuscitation is necessary.

c. If there is a possibility of a diving accident, the patient should be removed from the water on a backboard.

d. Pulmonary and cardiopulmonary resuscitation should be provided as required.

e. All pulseless, non-breathing patients who have been submerged in cold water less than 70 degrees (F), 21.1 degreees (C) should be resuscitated.

Diving Problems
(2:30) 0:20

1. In addition to resuscitation problems, two ascent problems require recompression: air embolism and bends (decompression sickness).

2. **Air Embolism**

a. **Problem.** Water pressure on the chest is rapidly reduced and air within the lungs expands. Too rapid expansion ruptures alveoli and damages adjacent blood vessels. A pneumothorax and air embolism can result.

b. **Signs**

1) Blotching or itching of skin.

Describe emergency care procedures. Explain that the limb should not be thawed if the patient must walk on it.

Explain.

Explain procedures.

Explain increased survivability time based on mammalian diving reflex.

      2) Froth from nose and mouth.
      3) Pain in muscles, joints, tendons, abdomen.
      4) Difficult breathing with chest pain.
      5) Dizziness and vomiting.
      6) Difficulty in seeing properly.
      7) Possible paralysis and coma.
   c. **Care**
      1) Provide basic life support and oxygen.
      2) Place patient on his left side with head and chest lower than feet.
      3) Transport to nearest emergency medical facility.

3. **Bends**

   a. **Problem.** Nitrogen is carried in the blood as small bubbles and released to tissues slowly. If pressure is released quickly (as in a rapid ascent), bubbles become larger and may obstruct the vessels in which they lie.

   b. **Signs.** Signs range from minor skin rashes and joint pains to serious central nervous system symptoms. It is called the bends since patient typically bends over from joint pain.

   c. **Care**
      1) Provide basic life support with oxygen.
      2) Transport to recompression chamber.

4. **Pneumothorax**

   a. **Problem.** Excessive pressure in the alveoli rupture these small air sacs. Air leaks into the pleural space.

   b. **Sign.** Severe chest pain and dyspnea.

Summary and Questions
(2.50) 0:10

1. Class questions or comments on the topic of the lesson.
2. Demonstration by selected class members of achievement of lesson objectives.

(3:00)

Give reason.

Give address of nearest recompression chamber.

Resubmersion is not an effective treatment.

Explain the bends may be present some time after ascent.

Question class members on selected objectives.

Lesson 24
Psychological Aspects of Emergency Care

Objectives

At the conclusion of Lesson 24, the instructor will have provided sufficient information, demonstration, and practice to the student, to ensure his/her ability to:

- Define communication.
- List eight general principles of communication.
- List two methods of applying general principles of communication with each of the following groups of patients:
  —Geriatric
  —Pediatric
  —Deaf
  —Blind
  —Non-English speaking
  —Mentally retarded/developmentally disabled
  —The confused patient
- List six possible causes for patients displaying disruptive behavior.
- List four steps the EMT can take to stabilize a disruptive situation.
- Demonstrate two methods of restraining and transporting patients in the ambulance.
- List four possible responses that a patient's family member may have to sudden death.
- List four possible responses that the EMT may have to sudden death.
- List four possible responses the terminally ill patient may display.
- List four possible responses the family of a terminally ill patient may display.
- List four positive approaches the EMT may take to assist the patient of family in dealing with the effects of crisis.
- List four responsibilities of the EMT when responding to suspected child abuse incidents.
- List four signs/symptoms which should lead the EMT to suspect child abuse.
- List four signs/symptoms of EMT-A stress syndrome.
- List four positive steps the EMT-A may apply to relieve stress.
- List three responses the EMT's family and friends may display in times of stress.
- List three possible methods of relieving stress among the EMT's family and friends.

Requirements

Material: (one for each student)
—Handout on handling sexual assault patient.
—Handout on sign language for deaf patients.

Equipment:
—35mm projector
—Movie screen
—Chalkboard
—Restraints and ambulance cot

Visual Aids:
—35mm slides AAOS or similar.

Instructors:
—One for lecture knowledgeable in all areas of subject matter in this lesson.

Instructor Preparation/ Tasks

The Instructor Should:

- Review the lesson outline to assure understanding of contents and procedures.
- Review and preview all references and visual aids selected for the lesson by the course administrator.
- Select and prepare appropriate instructional aids in addition to those provided by the course administrator; if desired.

- Be familiar with all visual aids and other equipment to be demonstrated during the lesson.
- Provide the student with a clear understanding of the problems he/she may confront with the patient displaying disruptive behavior.

Instructor's Notes

Time (Elapsed) Actual | **Contents**

Administrative Matters
(--) 0:05

1. Student attendance.
2. Announcements, etc.

Introduction
(0:05) 0:05

1. **Lesson Coverage**
    a. General principles of communication.
    b. Application of communication principles to categories of patients.
    c. Handling sudden death and terminal illness.
    d. Handling victims of crime and abuse.
    e. Handling your own emotional and stress response.
2. **Need for Lesson.** Effective communication is necessary to provide proper care to any patient.
3. **Lesson Objectives**
    a. Define communication.
    b. List four general principles of communication.
    c. List two methods of applying general principles of communication with each of the following groups of patients:
        1) Geriatric
        2) Pediatric
        3) Deaf
        4) Blind
        5) Non-English speaking
        6) Mentally retarded/developmentally disabled
        7) The confused patient
    d. List six possible causes for patients displaying disruptive behavior.
    e. List four steps the EMT-A can take to stabilize a disruptive situation.
    f. Demonstrate two methods of restraining and transporting patients in the ambulance.
    g. List four possible responses that a patient's family member may have to sudden death.
    h. List four possible responses that the EMT-A may have to sudden death.
    i. List four possible responses that the terminally ill patient may display.
    j. List four possible responses the family of a terminally ill patient may display.
    k. List four positive approaches the EMT-A may take to assist the patient or family dealing with the effects of crisis.
    l. List four responsibilities of the EMT-A when responding to victims of criminal acts.
    m. List four responsibilities of the EMT-A when responding to suspected child abuse incidents.
    n. List four signs/symptoms which should lead the EMT-A to suspect child abuse.
    o. List 8 signs/symptoms of EMT stress syndrome.
    p. List 4 positive steps the EMT-A may apply to relieve stress.
    q. List three responses the EMT's family and friends may display in times of stress.
    r. List three possible methods of relieving stress among the EMT's family and friends.

Principles of Communication
(0:10) 0:20

1. **Communication:** The act of expressing one's thoughts, needs and desires to another.
    a. Implies response by receiver
    b. Two way circuit:sender/receiver

If new instructor, introduce self and instructor aides.

Review lesson coverage and objectives. Emphasize importance of knowledge covered.

Refer to lesson objectives in the Student Study Guide and review with class.

257

Time
(Elapsed)
Actual

Contents

- c. Verbal
- d. Nonverbal
    - 1) Sign language
    - 2) Eye contact
    - 3) Posture
    - 4) Physical proximity

2. **Principles to Increase Effectiveness**
    - a. Make contact.
        - 1) Identify self.
        - 2) Express desire to help.
        - 3) Develop rapport.
    - b. Be direct.
        - 1) Answer questions honestly.
        - 2) Don't engender false hope.
        - 3) Assume and display responsibility.
        - 4) Establish expectations.
        - 5) Explain procedures.
    - c. Communicate at the correct level.
        - 1) Use understandable terminology.
        - 2) Listen; allow patient to participate.
        - 3) Evaluate understanding: re-explain as necessary.
        - 4) Avoid stock phrases; e.g., everything will be OK.
        - 5) One EMT-A should talk to the patient.
    - d. Remember nonverbal principles.
        - 1) Maintain eye contact.
        - 2) Don't invade patients "space" until it's comfortable.
        - 3) Act interested and concerned.

Patients Which May Present Communication Challenges
(0:30) 0:15

1. **Geriatric**
    - a. Don't assume senility or lack of understanding.
    - b. Use patient's name.
    - c. Check for hearing deficit.
    - d. Allow time for response.
    - e. Ask the patient what makes him most comfortable.
2. **Pediatric**
    - a. May be frightened.
    - b. May be modest.
    - c. Move slowly.
        - 1) Explain procedures.
        - 2) Use simple terms.
        - 3) Allow the child to retain crutch, i.e., toy, blanket.
        - 4) Dolls may be useful to demonstrate procedures on.
    - d. Be honest about pain caused by procedures.
    - e. Parent or sibling may be useful to help calm and explain.
    - f. Use eye level contact.

It is imperative that the EMT-A be truthful when dealing with the patient.

Time (Elapsed) Actual | **Contents**

3. **Deaf**
    a. Determine if patient can read lips.
        1) Speak slowly.
        2) Position self properly.
    b. Use interpreter if necessary.
    c. Use common signs.
        1) Sick
        2) Hurt
        3) Help
        4) Other
    d. Use written messages.
4. **Blind**
    a. Determine if patient has hearing impairments. Don't shout.
    b. Explain incident and procedures in detail.
    c. Explain procedures before initiating.
    d. Lead patient, if ambulatory, alerting to obstacles.
5. **Non-English Speaking**
    a. Determine level of understanding.
    b. Use interpreter if available.
    c. Use gestures.
    d. Refer to written charts.
6. **Confused or Developmentally Disabled**
    a. Determine level of understanding.
    b. Speak at appropriate level.
    c. Wait for delayed response.
    d. Speak as you would to any adult.
    e. Evaluate understanding and re-explain if necessary.
    f. Listen carefully.

Disruptive Behavior
(0:45) 0:15

1. **Disruptive Behavior:** Any behavior which presents a danger to the patient or others; or delays or prevents appropriate treatment.
2. **Causes**
    a. Stress response, i.e., hysteria, aggression.
    b. Alcohol.
    c. Drugs.
    d. Neurological trauma.
    e. Metabolic imbalance.
    f. Organic brain syndrome.
    g. Psychiatric disorders, i.e., paranoid schizophrenia, suicidal, etc.
3. **Treatment Approach**
    a. Assess situation.
        1) Dispatch information, why were you called?
        2) Actual environment, are you in danger?
        3) Is specialized assistance, e.g., Law enforcement, needed?
    b. Protect self, patient and others.
        1) Be alert for weapons.
        2) Be particularly alert in domestic disturbance situations.

Ask class for causes of disruptive behavior. List examples.

3) If danger exists, create a safe zone and wait for assistance.
4) Keep bystanders outside of safe zone.
5) If patient restraint is necessary to protect patient and allow treatment:
    a) Assess patient strengths.
    b) Make certain sufficient personnel are available for patient's safety.
    c) Once restrained, don't release until in the hospital.

c. Take charge of the situation.
  1) Identify self.
  2) Let patient know what you expect.
  3) Present a comfortable, confident and professional manner.

d. Practice effective communication.
  1) Listen.
  2) Show concern.
  3) Be empathetic.
  4) Be honest and direct.
  5) One person establish contact.

e. Don'ts.
  1) Diagnose.
  2) Judge.
  3) Label.
  4) Isolate self from team members.

f. Do's.
  1) Describe behavior.
  2) Provide quality care.
  3) Protect yourself.

Dealing with the Effects of Crisis
(1:00) 0:15

1. **Crisis:** A state of emotional turmoil.
  a. May develop over a long term.
  b. May be caused by sudden disruption or stressful situations.
2. Every emergency patient is in a potential crisis situation.
3. Specific crisis events:

Sudden Death
(1:15) 0:15

1) Causes: Trauma, Acute illness, MI, Ruptured aneurisms, Diabetic emergencies, Renal failure, Sudden Infant Death Syndrome, etc.
2) Family response:
    a. Denial.
    b) Guilt.
    c) Grief.
    d) Hostility.
    e) Hysteria.
    f) Crying.
    g) Delayed response.
    h) Physiological response.
        i. Nausea.
        ii. Vomiting.
        iii. Shock.
3) EMT's Response.
    a) Helplessness.
    b) Guilt.
    c) Avoidance.
    d) Anger.
    e) Frustration.
    f) Hyperclinical.
    g) Nightmares.
    h) Gallows humor.
    i) Physiological responses.

Time (Elapsed) Actual — **Contents**

Treatment of Sudden Death.

- a) Resuscitate patient unless obviously dead according to State or local protocol, e.g., decapitation.
- b) Avoid stock phrases such as: "Everything will be all right."
- c) Keep the family informed.
  - i. Don't offer false hope.
  - ii. Allow and accept emotional response, e.g., crying.
  - iii. One EMT-A may touch and emphathize with family.

Terminal Disease
(1:30) 0:15

1. Causes of terminal diseases:
   - a. Aging, cancer, congenital defects, etc.
2. Patient's response to terminal illness.
   - a. Denial.
   - b. Bargaining.
   - c. Anger.
   - d. Depression.
   - e. Acceptance.
3. Family response.
   - a. Same range as above, patient's response.
   - b. May be prepared and accepting.
4. EMT's response.
   - a. Inadequate, helpless.
   - b. Depends on age of patient.
5. Treatment of terminal disease problems.
   - a. Assess whether the patient is prepared.
   - b. Assess whether the family is prepared.
   - c. Don't isolate the family.
   - d. Allow feelings of patient and family.
   - e. Allow for patient's dignity in the dying process.
   - f. Resuscitate according to State and local protocol. Generally written physician orders are necessary to withhold resuscitation.

Victims of Abuse
(1:45) 0:15

1. Criminal activities.
   - a. Beatings.
   - b. Spouse abuse.
   - c. Rape.
   - d. Attempted murder.
2. Patient's response.
   - a. Outrage.
   - b. Disbelief.
   - c. Withdrawal.
   - d. Hysteria.
   - e. Depression.
3. Treatment of victims of criminal acts.
   - a. Quality emergency medical care: commensurate with injuries.
   - b. Maintenance of evidence—cooperate with law enforcement.
     - 1) In sexual crimes, don't allow the victim to bathe, douche, urinate, etc.
     - 2) Disrupt or touch as little evidence as possible.

Give examples of questions to ask family and patient, i.e., how long have you known? Do you feel prepared?

265

Time (Elapsed) Actual | **Contents**

    3) Mark body position.
  c. Provide emotional support.
  d. Use a professional approach.
  e. Know and follow all reporting requirements.
  f. Request specialized professional assistance, e.g., rape counselors, etc.
4. Child abuse.
  a. Widespread.
    1) 5,000 deaths annually.
    2) 15,000 reported incidents annually.
    3) 30,000 receive permanent scars or disabilities annually.
    4) 450,000 estimated unreported incidents.
    5) 10% of all pediatric patients seen in the emergency room are victims of abuse.
    6) Knows no social or economic barriers.
  b. Types.
    1) Physical beatings.
    2) Emotional.
    3) Sexual.
    4) Failure to thrive.
    5) Neglect.
  c. Signs and symptoms.
    1) Obvious wounds, particularly bilateral.
    2) Signs of other injuries in various stages of healing.
    3) Wounds not commensurate with the description of the incident.
    4) Signs of malnutrition.
    5) Child is unkempt.
    6) Statements by the child.
    7) Frequent calls to the same address.
  d. Treatment of victims of child abuse.
    1) Maintain a high index of suspicion.
    2) Treat injuries.
    3) Provide emotional support.
    4) Professional attitude.
      a) Don't be judgmental.
      b) Avoid anger and retaliation.
      c) Maintain confidentiality.
    5) Know and follow all reporting requirements.

Stress Response by the EMT-A
(2:00) 0:15

1. High stress occupation.
2. Recognition of common signs and
  a. Irritability.
  b. Lack of enthusiasm.
  c. Chronic fatigue.
  d. Feeling unappreciated.
  e. Nightmares.
  f. Increased alcohol or drug use.
  g. Decrease in social activities.
  h. Wanting to quit.
  i. Changes in appetite.
  j. Physiological responses, headache, ulcers, muscle aches, inablity to concentrate.

Ask class to provide causes of stress that the EMT-A might encounter. List on chalkboard.

Time (Elapsed) Actual	Contents
	k. Rigidity in thinking. l. Avoidance of change. 3. Intervention. a. Develop peer support. b. Develop achievable objectives. c. Change the environment. d. Show and accept emotional feelings. e. Counseling or professional help. f. Assessing career appropriateness. g. Continuing education to renew confidence. h. Sense of humor.
Family and Friend's Response to EMTs (2:15) 0:15	1. Family and friend response. a. Lack of understanding. b. Fear of separation and being ignored. c. On-call situations cause stress. d. Can't plan activities. e. Frustration caused by wanting to share. 2. Intervention. a. Plan time and stick to it. b. Share experiences, particularly successes. c. Explain need to wind down. d. Inform family and friends what you are doing, e.g., teach them CPR.
Demonstration and Practice (2:30) 0:20	1. Working in groups of 4, each student should practice: a. Application of 5 point restraints. b. Positioning the restrained patient in the ambulance. 1) For optimal control. 2) For treatment of specific injuries, e.g., airway care.
Summary and Questions (2:50) 0:10	1. Class questions or comments on the topic of the lesson. 2. Demonstration by selected class members of achievement of lesson objectives.
(3:00)	

Question class members on selected objectives.

Lesson 25
Lifting and Moving Patients

Objectives

At the conclusion of Lesson 25, the instructor will have provided sufficient information, demonstration and practice to the student, to ensure his/her ability to:

- Perform the following:
  - A direct 2-man lift of a patient from the ground and position him/her on a stretcher.
  - Immobilize the neck and spine of a patient using a short backboard.
  - Immobilize a patient on a long backboard and move to a stretcher.
  - Properly position a patient on a stretcher; load and unload the stretcher from all carrying positions in the ambulance.
- Define triage.
- List three patients who would fall under each triage category.

Requirements

Equipment:

- Stretcher—folding type (one for each six students)
- Ambulance cot (one only)
- Ambulance (one)
- Short backboard/straps (one for each six students)
- Long backboard/straps (one for each six students)
- Scoop stretcher (one for each six students)
- Sandbags (two for each six students)
- Cervical collar (small, medium, large) (one set for each six students)
- Blanket (one for each six students)
- Pillow (one for each six students)
- 35mm projector
- Movie screen
- Chalkboard.

Visual Aids:

—35mm slides AAOS or similar.

Instructors:

—One for lecture knowledgeable in all areas of subject matter for this lesson.

—One for each six students during practice session.

Instructor Preparation/ Tasks

The Instructor Should:

- Review the lesson outline to assure understanding of contents and procedures.
- Review and preview all references and visual aids selected for the lesson by the course administrator.
- Select and prepare appropriate instructional aids in addition to those provided by the course administrator; if desired.
- Be familiar with all visual aids and other equipment to be demonstrated during the lesson.
- Provide the student with a clear understanding of the rationale and procedures for lifting and moving a patient properly.
- Brief all instructor aides as to their roles and responsibilities during the lesson.

Time (Elapsed) Actual | **Contents**

Administrative Matters
(--) 0:05

1. Student attendance.
2. Announcements, etc.

Introduction
(0:05) 0:05

1. **Lesson Coverage.** Principles of moving patients; types, uses and distinguishing features of stretchers; practice in lifting and moving patients with and without suspected spine injuries; loading and unloading ambulances.

2. **Need for Lesson.** Proper patient handling will minimize injuries and discomfort for both patient and EMT-A. Lifting and moving will be used on every run.

3. **Lesson Objectives**
   a. Perform the following:
      1) A direct two-man lift of a patient from the ground and position him/her on a stretcher.
      2) Immobilize the neck and spine of a patient using a short backboard.
      3) Immobilize a patient on a long backboard and move to a stretcher.
      4) Properly position a patient on a stretcher; load and unload the stretcher from all carrying positions in the ambulance.
   b. Define triage.
   c. List three patients who would fall under each triage category.

General Considerations
(0:10) 0:05

1. In general, a patient should not be moved until he is ready for transportation to a hospital. All necessary emergency care should be provided first.

2. A patient should be moved only if there is an immediate danger to him or others if he is not moved, that is:
   a. There is fire or danger of fire.
   b. Explosives or other hazardous materials are involved.
   c. It is impossible to protect the accident scene.
   d. It is impossible to gain access to other victims in a vehicle who need life-saving care.

   NOTE: A cardiac-arrest patient would typically be moved unless he is on the ground or floor, since cardiopulmonary resuscitation must be performed on a firm surface.

3. If it is necessary to move a patient, the speed with which he is moved will depend on the reason for moving him, for example:
   a. **Emergency Move.** If there is a fire, the patient will be pulled away from the area as quickly as possible.
   b. **Non-Emergency Move.** If the patient needs to be moved to gain access to others in a vehicle, due consideration will be given to his injuries before and during movement.

Emergency Moves
(0:15) 0:05

1. The major danger in moving a patient quickly is the possibility of aggravating spine injury.

2. In an emergency, every effort should be made to pull the patient in the direction of the long axis of the body to provide as much protection to the spine as possible.

3. It is impossible to remove a patient from a vehicle quickly, and, at the same time, provide protection for his spine.

4. If the patient is on the floor or ground, he can be dragged away from the scene by tugging on his clothing in the neck and shoulder area.

5. It may be easier to pull the patient onto a blanket and then drag the blanket away from the scene.

If new instructor, introduce self and instructor aides.

Review lesson coverage and objectives.

Emphasize importance of skills and knowledge covered.
Refer to lesson objectives in the Student Study Guide and review with class.

Ask class to identify situations requiring emergency moves.

Demonstrate clothes and shoulder drag on a student.
Demonstrate blanket drag on a student.

272

6. Such moves are emergency moves only. They do not adequately protect the spine from further injury.

Non-Emergency Moves
(0:20) 0:10

1. **General Comments**
   a. All injured parts should be immobilized prior to movement.
   b. All injured parts should be protected during movement.
2. **EMT-A Protection.** In order to protect himself, the EMT-A should use the following principles in all non-emergency moves:
   a. Keep in mind physical capabilities and limitations and do not try to handle too heavy a load. When in doubt, seek help.
   b. Do not attempt to lower a patient if you feel you could not lift him.
   c. Keep yourself balanced when carrying out all tasks.
   d. Maintain a firm footing.
   e. Maintain a constant and firm grip.
   f. Lift and lower by bending the legs and not the back—keep the back as straight as possible at all times; bend knees and lift with one foot ahead of the other.
   g. When holding or transporting, keep the back straight and rely on shoulder and leg muscles; tighten muscles of the abdomen and buttocks.
   h. When performing a task that requires pulling, keep the back straight and pull using the arms and shoulders.
   i. Carry out all tasks slowly, smoothly and in unison with your partner.
   j. Move body gradually; avoid twisting and jerking when conducting the various patient-handling tasks.
   k. When handling a patient, try to keep the arms as close as possible to the body in order to maintain balance.
   l. Do not keep muscles contracted for a long period of time.
3. **Vehicle Moves**
   a. Lifting a patient from a vehicle will require ingenuity depending on the situation.
   b. Patients may be completely mobile or partially mobile and thus can assist in the move.
   c. For completely immobile patients, the rescuer will need to solicit help and move the patient as well as he can under the circumstances.
   d. The student will have an opportunity to practice moving different types of patients from vehicles in the extrication lesson.

Stretchers
(0:30) 0:20

1. **Types**
   a. **Wheeled Stretcher**—the standard ambulance cot; it is designed to be rolled and is not easily lifted.
   b. **Portable Stretchers**—easily lifted devices.
   c. **Stair Chairs**—designed for patient-handling over stairways and through narrow halls and other confined areas.
   d. **Backboards**—designed for immobilizing patients with suspected spine injuries; the short board serves as an intermediate device for immobilizing patients who are not in a position that permits direct transfer to the long board, that is, patients seated in cars.
   e. **Scoop Stretchers**—designed for immobilizing patients with suspected spine injuries; patient must be supine.

Ten-Minute Break
(0:50) 0:10

Give reason.

Display and describe use and distinguishing features of each type.

Ask class to describe positioning of patients with various illnesses/injuries.

Time (Elapsed) Actual | **Contents**

2. **Positioning**
   a. Myocardial infarction patients should be semi-reclining.
   b. Unconscious patients should be on their side down, in the coma position. Spine injury patients must be immobilized first.
   c. Persons with suspected spine injuries should be immobilized completely.
   d. Legs should be elevated in shock situations.

Direct, Ground Lift, No Spine Injury, Two or Three Rescuers
(1:00) 0:10

1. Rescuers line up on one side of the patient.
2. Rescuers drop one knee to the ground (the same knee for each rescuer).
3. The patient's arms are placed on his chest if possible.
4. The head rescuer places one arm under the patient's neck and shoulder and cradles the patient's head.
5. The head rescuer places his other arm under the patient's lower back.
6. The second rescuer places one arm under the patient's knees and one arm above the buttocks.

NOTE: If there is a third rescuer, he places both arms in the waist area and the other two rescuers slide their arms up to the mid-back or down to the buttocks as appropriate.

7. On signal, rescuers lift the patient to their knees and roll him in toward their chests (the rescuers' backs are now straight and they are supporting the patient by their arms and chests).
8. On signal, the rescuers stand, move the patient to a stretcher.
9. To replace the patient on the ground or on a low cot, the procedures would be reversed.

Extremity Lift, No Fractures (or All Fractures Splinted), Two Rescuers
(1:10) 0:10

1. One rescuer kneels at the head of the patient and one at the side by the patient's knees.
2. The head rescuer places one hand under each of the patient's shoulders while the foot rescuer grasps the patient's wrists.
3. The foot rescuer pulls the patient to a sitting position; the head rescuer assists by pushing the patient's shoulders up and supporting his back and head with his body.
4. The head rescuer slips his hands under the patient's arms and grasps the patient's wrists.
5. The foot rescuer slips his hands under the patient's knees.
6. Both rescuers crouch on both feet.
7. They stand simultaneously and move with the patient to a stretcher.

Immobilization on Short and Long Backboards
(1:20) 0:05

1. Support patient's head.
2. Immobilize neck with collar/blanket/sandbags.
3. Position board behind patient (short board), OR shove board beneath patient (long board).
4. Pad board as appropriate and secure straps.
5. Assure that patient is secure.

Transfer of Patient From Bed to Stretcher
(1:25) 0:20

1. **Direct Carry**
   a. Position cot: head end of cot at foot end of bed.
   b. Prepare cot, remove straps, etc.
   c. Position patient, supine.
   d. Both EMT-As stand between bed and stretcher facing patient.
   e. One EMT-A slides arm under patient's neck and cups patient's shoulder.
   f. Other EMT-A slides hand under hip and lifts slightly.

Develop list with class. Select two students to demonstrate technique on fellow student.

Select two students to demonstrate technique on fellow students.

BRIEFLY review procedures since they were previously practiced in Lesson 15.

Time (Elapsed) Actual | **Contents**

- g. Other EMT-A then slides other arm under the patient's back.
- h. Foot end EMT-A places arm underneath hips and calves.
- i. Slides patient to the edge of bed.
- j. Lift patient and curl towards EMT-A's chest.
- k. Rotate and place patient gently onto cot.

2. **Draw Sheet Method.**
   - a. Loosen bottom sheet.
   - b. Position cot, parallel and touching bed.
   - c. Prepare cot: adjust cot height, lower rail, remove straps.
   - d. Reach across cot.
   - e. Grasp sheet at patient's head, chest, hips and knees.
   - f. Slide patient gently onto cot.

   NOTE: Similar methods can be used if the patient is on a spine board or without any device underneath the patient (slide transfer).

Maneuvering the Stretcher
(1:45) 0:05

1. **Rolling.**
   - a. Preferable method.
   - b. Restricted to smooth terrain.
   - c. Foot end first.
   - d. Maintain control with EMT-A at foot, one at head.
2. **Carrying.**
   - a. End to end.
     - 1) Preferable in narrow spaces.
     - 2) Limited to level or moderate terrain.
     - 3) Easily unbalanced.
     - 4) Requires strength.
     - 5) EMT-As face each other.
   - b. Side carry.
     - 1) More stable.
     - 2) Additional personnel.
     - 3) Safer over rough terrain.
     - 4) Used in wheeled cot into loading ambulance.

Ten-Minute Break
(1:50) 0:10

Loading the Ambulance
(2:00) 0:20

1. Identify potential patient needs, e.g., airway problems.
   - a. Select proper position in the ambulance based on needs.
   - b. Load hanging stretchers first.
   - c. Load wheeled stretchers.
2. Use sufficient manpower in lifting and positioning.
3. Make certain all cots and patients are secured before moving ambulance.

Triage
(2:20) 0:30

1. **Definition.** Triage means sorting multiple casualties into priorities for emergency care or for transportation to definitive care.
2. **Priorities.** Priorities are usually given in three levels as follows:
   - a. **Highest Priority**
     - 1) Airway and breathing difficulties.

Explain height adjustment.

Discuss specific local protocols and procedures.

List on chalkboard. Ask class for suggestions.

Time (Elapsed) Actual | **Contents**

    2) Cardiac arrest—sufficient personnel permitting. Do not tie up manpower for extended periods of resuscitation if numerous other patients need assistance.
    3) Uncontrolled or suspected severe bleeding.
    4) Severe head injuries.
    5) Severe medical problems—poisonings, diabetic complications, cardiacs.
    6) Open chest or abdominal wounds.
    7) Shock.
  b. **Second priority**
    1) Burns.
    2) Major or multiple fractures.
    3) Back injuries with or without spinal cord damage.
  c. **Lowest Priority**
    1) Fractures or other injuries of a minor nature.
    2) Obviously mortal wounds where death appears reasonably certain.
    3) Obviously dead.

3. Procedures.
   a. Most knowledgeable EMT-A arriving in first ambulance must become triage officer.
   b. Primary survery should be completed on all patients first. Correct immediate life threatening problems.
   c. Call for additional assistance if needed.
   d. Assign available manpower and equipment to priority one patients.
   e. Transport priority-one patients first.
   f. Notify hospital(s) of number and severity of injuries.
   g. Triage officer remains at scene to assign and coordinate manpower, supplies and vehicles.
   h. Patients must be reassessed regularly for changes in condition.

Summary and Questions
(2:50) 0:10
(3:00)

1. Class questions or comments on topic of lesson.
2. Demonstration by selected class members of achievement of lesson objectives.

Ask class for suggestions.

Discuss specific local procedures and plans.

Question class members on selected objectives.

Lesson 26

Principles of Extrication

Objectives

At the conclusion of Lesson 26, the instructor will have provided sufficient information, demonstration, and practice to the student, to ensure his/her ability to:

- Describe the proper methods and appropriate times to utilize the following extrication equipment:
  —Porta power
  —Hand winch
  —Pry axe
  —Air chisel (optional)
  —Cribbing
  —Bale Hook
  —Hack saw
  —Linoleum knife
  —Screw driver
  —Spring-loaded center punch
  —Other
- List the location of all extrication equipment on the vehicle.
- Name the agency responsible for providing extrication equipment to a scene and how and when that equipment gets to the scene.

Requirements

Equipment: (one of each)

- Wrecked car
- Extrication equipment to include the following:
  —Porta-power
  —Hand winch
  —Pry axe
  —Air chisel (Optional)
  —Roll of 3" tape
  —Cribbing
  —Bale hook
  —Linoleum knife
  —Blanket with salvage cloth
  —Hack saw
  —Screw drivers
  —Spring loaded center punch
  —Other
- Ambulance
- 35mm projector
- Movie screen
- Chalkboard

Visual Aids:

- 35mm slides AAOS or similar
- 35mm slides "Motor Vehicle Trauma"—DOT

Instructors:

- One for lecture and demonstration knowledgeable in all areas of subject matter in this lesson.

Instructor Preparation/Tasks

The Instructor Should:

- Review the lesson outline to assure understanding of contents and procedures.
- Review and preview all references and visual aids selected for the lesson by the course administrator.
- Select and prepare appropriate instructional aids in addition to those provided by the course administrator; if desired.
- Be familiar with all visual aids and other equipment to be demonstrated during the lesson.
- Provide the student with a clear understanding of all aspects of proper patient extrication techniques, including introduction to all equipment.

Time (Elapsed) Actual | **Contents**

Administrative Matters
(--) 0:05

1. Student attendance.
2. Announcements, etc.

Introduction
(0:05) 0:05

1. **Lesson Coverage.** The lesson provides basic hints on gaining access to and disentangling patients from vehicles. The major emphasis of the lesson is practice in packaging patients with suspected spine AND other injuries and removing them from vehicles.

2. **Need For Lesson.** The EMT-A may be the first at the accident scene and should know simple procedures for gaining access to and disentangling patients. Proper patient packaging and removal will minimize danger of further injury or aggravation of existing injuries.

3. **Lesson Objectives**
   a. Describe the role of the EMT-A in extrication.
   b. Describe techniques that the EMT-A can use to gain access to or disentangle patients from vehicles.
   c. Describe the proper methods and appropriate times to utilize the following extrication equipment:
      1) Porta-power
      2) Hand winch
      3) Pry axe
      4) Air Chisel (optional)
      5) Cribbing
      6) Bale hook
      7) Linoleum knife
      8) Hack saw
      9) Screw drivers
      10) Spring-loaded center punch
      11) Other
   d. List the location of all extrication equipment on the vehicle.
   e. Name the agency responsible for providing extrication equipment to a scene and how and when that equipment gets to the scene.

Basic Considerations
(0:10) 0:15

1. **Role Of The EMT-A**
   a. His responsibility is to administer necessary care to the patient before extrication and to assure that the patient is removed from the vehicle in such a way as to minimize further injury.
   b. If rescue crews are not present, he should be prepared to use prying and cutting tools to gain access to the patient and disentangle the vehicle from the patient.
   c. If rescue crews are present, he should cooperate with their activities but should not allow their activities to endanger the patient.
   d. If rescue crews are present, the EMT-A should attend to the needs of the patient while rescue activities proceed if possible.

2. **Basic Principles Of Emergency Care.**
   a. Patient care precedes extrication unless delayed movement would endanger life of the patient or rescuer. Patient care should include:
      1) Attention to life-threatening emergencies.
      2) Immobilization of fractures.
   b. Cervical and thoracic fractures should be suspected in unconscious patients.
   c. All patients should be packaged and moved carefully to minimize danger of further injury or aggravation of existing injuries.

Instructor's Notes

If new instructor introduce self and instructor aids.

Advise students that this lesson provides only a brief exposure to extrication. A complete course is available from the Department of Transportation.

Additional practical skill development in these techniques is provided in Lesson 27.

Review lesson coverage and objectives. Emphasize criticality of skills and knowledge covered.

Ask class to suggest other patient care that could be provided.

Describe each stage.

283

3. **Stages Of Extrication**
   a. Gaining access to patients.
   b. Attending to life-threatening emergencies.
   c. Disentanglement.
   d. Preparation for removal (patient packaging).
   e. Removal.

Introduction To Basic Tools.
(0:25) 0:35

1. Cribbing.
2. Pry axe or slide hammer.
3. Hack saw.
4. Screw drivers.
5. Linoleum knife.
6. Porta-power.
7. Hand winch.
8. Air chisel.
9. Spring-loaded center punch.
10. Others (local preference).

Gaining Access
(1:00) 1:30

1. Protect self.
   a. Survey scene and control hazards.
   b. Wear protective clothing.
   c. Recognize the limitations of your training.
2. Stabilize vehicle.
   a. Cribbing.
   b. Spare tire.
   c. Jack (not bumper).
   d. Tied off.
3. Entering the vehicle.
   a. Doors
      1) Check all.
      2) If locked:
         a) have victim unlock.
         b) use wire hook to unlock.
      3) Cut metal panel around handle to expose latching mechanism.
   b. Windows
      1) Rear and side.
         a) designed to shatter.
         b) glass may be sprayed onto patients.
         c) choose window away from patient.
         d) contact paper may be used to reduce glass spreading.
         e) use sharp object.
            i. spring-loaded punch.
            ii. punch and hammer.
            iii. point of pry axe.
      2) Windshields
         a) laminated, will not shatter.
         b) mounting.
            i. channel, before 1965.
            ii. soft adhesive, 1965-1969.
            iii. mastic after 1969.
         c) either mounting or glass must be cut.
   c. Roof
      1) Thin metal, easily cut.
      2) Cut two sides and top.

Instructor's Notes

Display, describe and demonstrate purpose and function of each.

Demonstrate and explain procedures.

Stress importance of EMT safety.

Stress patient safety.

Time (Elapsed) Actual | **Contents**

        - 3) Fold down.
        - 4) Cut roof supports.
        - 5) Cut headliner and support rods.
    - d. Floor
        - 1) Locate rear foot well.
        - 2) Cut through three sides and fold back.

Ten-Minute Break
(1:30) 0:10

Stabilization Of Patient
(1:40) 0:10

1. Once access has been gained:
    - a. Primary survey.
    - b. Correct life-threatening problems.
    - c. Stabilize spine.
    - d. Note mechanism of injury.
    - e. Protect from further injury during disentanglement.
        - 1) Cover.
        - 2) Shield.
        - 3) Pad.

Disentanglement
(1:50) 0:20

1. Remove wreckage from patient, not patient from wreckage.
2. Opening doors.
    - a. Try inside handle and lock.
    - b. Cut panel to expose latch.
    - c. Use Porta-power.
    - d. Once open, widen to 90 degrees.
        - 1) Three rescuers.
        - 2) Hand winch.
3. Move seats back.
    - a. Manual slide control.
    - b. Electric slide control.
    - c. Hand winch.
4. Remove the top.
    - a. Cut posts.
    - b. Score roof.
    - c. Fold back.
5. Displacing steering wheel and column.
    - a. Cut and remove wheel.
    - b. Displace column upward.
        - 1) Hand winch and chain method.
        - 2) Jack method.
6. Displacing pedals.
    - a. Porta-power.
    - b. Jack.
    - c. Hand winch.
    - d. Rope and manpower.

Floor entry may be difficult or impossible on newer vehicles.

Demonstrate techniques and explain that the EMT-A should do only what is needed to remove the patient.

Caution against any movement of the vehicle.

Time (Elapsed) Actual	Contents
Preparing Patient For Removal. (2:10) 0:20	1. Maintain cervical stabilization. 2. Secondary survey, look for mechanism of injury. 3. Treat injuries. a. Bandage open wounds. b. Splint or stabilize fractures. c. Immobilize spine securely. 1) Short spine board. 2) Long spine board. 3) Commercial immobilization devices.
Removal (2:30) 0:10	1. Move patient, not devices. 2. Make certain sufficient manpower is available. 3. Choose path of least resistance. 4. Protect patient from sharp metal.
Demonstration (2:40) 0:20 (3:00)	1. Demonstrate all techniques listed above. **NOTE:** This is an introductory session only, student proficiency will be achieved in the next 3-8 hour practical lab session.

Give examples of patients.

Use selected students to assist with patient stabilization and preparation.

Lesson 27
Practical Lab: Extrication

Objectives

At the conclusion of Lesson 27, the instructor will have provided sufficient information, demonstration, and practice to the student, to ensure his/her ability to:

- Demonstrate on programmed patients, the techniques of lifting and moving of patients taught in Lesson 25 in conjunction with the principles of extrication in Lesson 26.
- Demonstrate on appropriate vehicles the techniques of gaining access to entrapped or entangled patients by use of equipment demonstrated in Lesson 26.
- Demonstrate the correct usage of short and long boards in stabilizing and removing a programmed patient from a vehicle.

Requirements

Equipment:

- Wrecked car (one for each 5 students).
- Ambulance (one only).
- Extrication equipment to include the following (one for each 5 students):
  - —Porta-power
  - —Hand winch
  - —Pry axe or slide hammer
  - —Air chisel (optional)
  - —Roll of 3" tape
  - —Long board/straps
  - —Cervical collar (small, medium, large)
  - —Pillow
  - —Cribbing
  - —Linoleum knife
  - —Blanket or salvage cloth
  - —Short board/straps
  - —Scoop stretcher
  - —Sandbags
  - —Makeup kit
  - —Spring-loaded center punch
  - —Protective garments, i.e., gloves, helmets, turnout gear, boots, etc.

Instructors:

- One for each five students during practice session.
- One or more programmed patients for each five students.

Instructor Preparation/Tasks

The Instructor Should:

- Review the lesson outline to assure understanding of contents and procedures.
- Be familiar with all equipment to be demonstrated during the lesson.
- Provide the student with ample practical experience to ensure his/her competency in all areas of lifting and moving a patient after properly extricating the patient from a wrecked vehicle. All procedures and techniques from Lessons 25 and 26 should be covered.

Time
(Elapsed)
Actual

Contents

Administrative Matters
(--) 0:05

1. Student attendance.
2. Announcements, etc.

Introduction
(0:05) 0:05

1. **Lesson Coverage.** The lesson provides basic techniques of gaining access to and disentangling patients from vehicles. The major emphasis of the lesson is practice in packaging patients with suspected spine and other injuries and removing them from vehicles.
2. **Need For Lesson.** The EMT-A may be the first at the accident scene and should know simple procedures for gaining access to and disentangling patients. Proper patient packaging and removal will minimize danger of further injury or aggravation of existing injuries.
3. **Lesson Objectives**
    a. Demonstrate on programmed patients, the techniques of lifting and moving patients taught in Lesson 25 in conjunction with the principles of extrication in Lesson 26.
    b. Demonstrate on appropriate vehicles the techniques of gaining access to entrapped or entangled patients by use of equipment demonstrated in Lesson 26.
    c. Demonstrate the correct usage of short and long boards in stabilizing and removing a programmed patient from a vehicle.

Practice
(0:10)
2:50-7:50

1. Divide classes into equal groups. The instructor for each group should:
    a. Stress and ensure personal and patient safety including the use of protective safety apparel.
    b. Familiarize each student with every item of equipment.
    c. Provide the opportunity for each student to participate in gaining access to patient for stabilization, disentanglement, packaging and removal.
2. After familiarity with procedures and tools has been gained, programmed patients should be added to the vehicles and each group should be assigned the task of safely removing the patient from the vehicle.

Summary And Questions
(2:50-7:50)
0:10

1. Class questions or comments on the topic of the lesson.
2. Demonstration by selected class members of achievement of lesson objectives.
3. Remind students next lesson is an exam.

(3:00-8:00)

Instructor's Notes

If new instructor, introduce self and instructor aides.

Advise students that this lesson provides only an introduction to extrication. As with all EMT-A skills, continuing education is necessary. A complete course is available from the Department of Transportation.

Review lesson coverage and objectives. Emphasize criticality of skills and knowledge covered.

Although groups not larger than 5 are recommended, availability of vehicles, equipment and instructors will determine working group size. As the size of the group increases so too will time allotments.

Smaller subgroups or teams should be assigned specific duties on the overall procedures to ensure that each student participates.

Instructor should monitor the activity using a checklist and provide suggestions for improvements.

Question class members on selected objectives.

Lesson 28 Test and Evaluation: Medical Emergencies, Emergency Childbirth, Environmental Emergencies, Lifting and Moving

Objectives

The instructor will provide and administer a written and practical examination which allows the student to:

—Successfully complete a written examination reflecting the knowledge taught in Lessons 19, 20, 21, 22, 23, 24, 25 and 26 of the Emergency Medical Technician-Ambulance: National Standard Curriculum.

—Successfully demonstrate through practical application on appropriate programmed patients or manikins, selected representative skills taught in Lessons 19, 20, 21, 22, 23, 24, 25, and 26 of the Emergency Medical Technician-Ambuance: National Standard Curriculum.

Note: Lessons 25 and 26 may be only briefly evaluated as it is assumed proficiency was demonstrated during those lessons.

Requirements

Material: (One for each student)

- Written exam covering material from Lessons 19, 20, 21, 22, 23, 24, 25, and 26.

Equipment: (One for each six students)

- Adult resuscitation manikin.
- Infant resuscitation manikin.
- Appropriate quantities of antiseptic solution and gauze pads.
- Oropharyngeal airways.
- Nasopharyngeal airways.
- Nasal cannula and mask.
- Bag valve mask.
- Sterile delivery pack.
- Portable suction.
- Oxygen equipment (complete).
- Pocket mask with oxygen inlet valve.
- Obstetrical manikin.
- Premature infant carrier.
- Makeup kit.

Instructor:

—One to monitor written examination.

—One for each five students during practical exam.

Note: It is recommended that this lesson include three or four additional instructor aides to serve as patients during the evaluation of the skill of patient assessment. Each patient should simulate a different problem.

Note: If there are fewer instructors or less equipment than specified, additional time will be required for this lesson.

Instructor Preparation/Tasks

The Instructor Should:

- Review the lesson outline to assure understanding of contents and procedures.
- Be familiar with all visual aids and other equipment to be demonstrated during the lesson.
- Provide the student with a fair evaluation of the knowledge gained in Lessons 19, 20, 21, 22, 23, 24, 25, and 26 by presenting and monitoring a written examination on this material.
- Provide the student with a fair skills evaluation by presenting a practical skills examination covering representative skills gained in Lessons 19, 20, 21, 22, 23, 24, 25, and 26.
- Brief all instructor aides as to their roles and responsibilities during the lesson.

Note: Evaluation Of Knowledge Objectives.

It is assumed that instructors for individual lessons will assist the course administrator in developing written test items for the lessons they teach. It will be the responsibility of the course administrator to assemble a balanced test that is directed toward assessing whether or not the knowledge objectives of Lessons 19 through 26 have been achieved.

The instructor for the first part of this lesson serves largely as a monitor of the test itself. He should assure that he has sufficient copies of the test for each student and should review all procedures for completing the test so that he can explain these procedures correctly to the students.

Evaluation Of Skill Objectives.

In order to assure that all students are evaluated in the same manner, the instructor should have a checklist on which he can check off the principal features of the skill to be evaluated. This checklist essentially comprises the student's evaluation sheet. It is assumed that the checklist will be prepared by the instructor and course administrator. To aid in designing checklists, the lesson plan identifies certain features of each skill. These may be refined into a list of steps. The resultant steps may not be all of equal weight in skill evaluation. The primary purpose of the checklist is to aid instructors in standardizing their evaluations of student performance. All instructors must be briefed on checklist use.

Detailed procedures are not specified for the lesson since they will vary depending on the number of students in the class, the number of instructors and the amount of material available. It is suggested that the instructors divide among themselves the skills to be evaluated. In effect, the lead instructor should set up test stations. He should also assure that all materials required for the lesson are available.

All instructors should be thoroughly briefed on their responsibilities. Needless to say, each instructor should review the lesson plans and references so that they are thoroughly knowledgeable about their contents.

Instructor's Notes

Time (Elapsed) Actual	Contents
Administrative Matters (–) 0:05	1. Student attendance. 2. Announcements, etc.
Evaluation Of Knowledge Objectives (0:05) 0:60	1. Student completion of written test designed to evaluate attainment of the knowledge objectives specified for Lessons 19 through 26.
Ten-Minute Break (1:05) 0:10	
Evaluation Of Skill Objectives (1:15) 1:45	1. The instructor should use a checklist to evaluate student profiency in performing the following minimum representative skills. a. Normal emergency childbirth. Working with an obstetrical manikin the student must demonstrate proficiency in assisting in a normal childbirth. b. Two Man Direct Ground Lift. Working in pairs on an instructor or another student, each student should demonstrate proficiency in a two-man direct ground lift. c. Working singularity or in pairs each student should complete as a minimum the following programmed patient situations: 1) Primary and secondary survey and treatment of a heart attack patient. 2) Primary and secondary survey and treatment of a patient in a diabetic emergency. 3) Primary and secondary survey of a patient with moderate burns. 4) Primary and secondary survey and treatment of a patient displaying disruptive behavior.
(3:00)	

Distribute test. Explain procedures for taking test. Collect completed papers. The class may be divided with half starting on the written exam and half on the practical exam.

Maneuver infant manikin.

Rotate student through the victims' stations so that each student examines each victim. Time limits may have to be imposed to ensure efficient rotation of students. In these situations, the student should be evaluated on the efficiency of his activities and the quality of the work completed.

Skills checklists should be used to ensure uniform evaluation.

Two or more of these situations may be incorporated into a multiple trauma patient situation. Students may work in teams, however the lead role should be changed at each station.

Lesson 29
Ambulance Operations I

Objectives

At the conclusion of Lesson 29, the instructor will have provided sufficient information, demonstration and practice to the student, to ensure his/her ability to:

- Quote all laws relating to his/her operation of the ambulance and privileges in any or all of the following categories:
  - Speed
  - Warning lights
  - Sirens
  - Right-of-way
  - Parking
  - Turning
- List four contributing factors to unsafe driving conditions.
- Describe in narrative the considerations that should be given to:
  - Requests for escorts
  - Following an escort vehicle.
  - Intersections.
- List agency contact capabilities of all two-way radio channels in the ambulance. List the correct radio use procedures in the following phases of a typical run:
  - To the scene
  - At the scene
  - To the facility
  - At the facility
  - To the squad station
  - At the squad station
- List the proper method of initiating and terminating a radio call.
- Demonstrate proper techniques in use of a radio.
- List proper sequence of delivery patient information.
- Describe what information is required in each area of the trip ticket and how it should be entered.
- Describe where trip report forms should be left and how they are used.
- List all State and/or local record and reporting requirements.

Requirements

Material: (one for each student)

- Handouts on correct radio procedure and use.
- Handouts on rules and regulations concerning driving of ambulance.
- Handout sample of trip report form.

- Be familiar with all visual aids and other equipment to be demonstrated during the lesson.
- Provide the student with a clear understanding of all laws, rules and regulations governing his/her driving of an ambulance.
- Provide the student with a clear understanding of the State and local EMS communications system and how to operate all relevant equipment.
- Provide the student with a clear understanding of the State and local recordkeeping system and how to comply with requirements in this area.

Equipment:

- Model of radio used by EMS system in area (one only)
- 35mm projector
- 16mm projector
- Movie screen
- Chalkboard

Illustrations:

- Chart showing local EMS communications system.
- Chart showing local EMS recordkeeping system.

Visual Aids:

- 35mm slides AAOS or similar
- 16mm film—"Ambulance Run" or similar

Instructor:

—State EMS office representative or his/her assignee knowledgeable in all areas of subject matter in this lesson.

Instructor Preparation/Tasks

The Instructor Should:

- Review the lesson outline to assure understanding of contents and procedures.
- Review and preview all references and visual aids selected for the lesson by the course administrator.
- Select and prepare appropriate instructional aids in addition to those provided by the course administrator; if desired.

Time (Elapsed) Actual | **Contents**

Administrative Matters
(--) 0:05

1. Student attendance.
2. Announcements, etc.

Review of Previous Lesson
(0:05) 0:20

1. Written test-provide correct answers and identify common errors made in the written test administered in the previous lesson.
2. Practical examination—overall class performance and common errors made in the demonstration of skills in the previous lesson.

Introduction
(0:25) 0:05

1. **Lesson Coverage.** Review of previous lesson, laws regulating operation of emergency vehicles, factors contributing to safe driving, maintaining a safe and ready vehicle, EMT-A records and reports, communication systems, procedures at emergency departments.
2. **Need For Lesson.** The lesson has been included to provide the student with some knowledge of and familiarity with the operational aspects of the EMTA's job in the area in which he will be working.
3. **Objectives.**
   a. Quote all laws relating to the operation of the ambulance and privileges in any or all of the following categories:
      1) Speed
      2) Warning lights
      3) Sirens
      4) Right-of-way
      5) Parking
      6) Turning
   b. List four contributing factors to unsafe driving conditions.
   c. Describe in narrative the considerations that should be given to:
      1) Request for escorts.
      2) Following an escort vehicle.
      3) Intersections.
   d. List agency contact capabilities of all two-way radio channels in the ambulance.
   e. List the correct radio use procedures in the following phases of a typical run:
      1) To the scene
      2) At the scene
      3) To the facility
      4) At the facility
      5) To the squad station
      6) At the squad station
   f. List the proper method of initiating and terminating a radio call.
   g. Demonstrate proper techniques in use of a radio.
   h. List proper sequence of delivery patient information.
   i. Describe what information is required in each area of the trip ticket and how it should be entered.
   j. Describe where trip report forms should be left and how they are used.
   k. List all State and/or local record and reporting requirements.

Driving An Emergency Vehicle
(0:30) 1:00

1. **Laws, Regulations, Ordinances.** Review State and local laws, regulations or ordinances in the area relative to the operation of an emergency vehicle, including as appropriate:
   a. Vehicle parking or standing regulations.
   b. Procedures at red lights, stop signs and other intersections.

Instructor's Notes

Note: The review part of the lesson should be conducted by an individual knowledgeable about the previous practice, test and evaluation session. Distribute student tests. Review test pointing out correct answers and discussing common errors. Review overall performance and discuss types of errors made by class members.

Review lesson coverage and objectives.

Point out that equipment, systems and procedures will vary locally.

Point out commonly accepted procedures.

Time (Elapsed) Actual	Contents

c. Regulations regarding speed limits.

d. Exemptions from following direction-of-movement regulations or specified turns.

e. Standard emergency or disaster routes.

f. Use of audible signals, e.g., siren.

g. Use of visual signals, e.g., lights.

2. **Factors That Might Make An EMT-A Use Unsafe Driving Habits.**

   a. LACK OF EXPERTISE IN THE DISPATCHER. He should be an experienced EMT-A capable of judging the urgency of an emergency case.

   b. INADEQUATE EQUIPMENT IN THE AMBULANCE. If the EMT-A cannot stabilize the patient with available equipment, the patient will need speedy transport.

   c. INADEQUATE TRAINING OF THE EMT-A. If the EMT-A does not have proper training to stabilize the patient, he must transport the patient rapidly.

   d. INADEQUATE DRIVING ABILITY. The EMT-A needs training in the driving of his emergency vehicle.

3. **Factors Contributing To Safe Driving**

   a. Is alert to changing weather and driving conditions.

   b. Follows specified routes for routine runs but has alternate routes for contingencies.

   c. Uses extreme left-hand lane on multilane highway.

   d. Drives defensively.

   e. Uses care in exercising the right-of-way privilege.

   f. Exercises care in use of siren.

   g. Maintains safe following distances.

   h. Requests other emergency assistance (e.g., police) as needed.

4. **Escorts** and multiple vehicle responses.

   a. Extremely dangerous.

   b. Should be used only if unfamiliar with location of patient or hospital. No vehicle should use lights or sirens.

   c. Provide for a safe following distance.

   d. Recognize hazards of multiple vehicle responses.

5. **Intersection Accidents.** These are the most common and include:

   a. Motorists arrives at intersection as light changes so he doesn't stop.

   b. One emergency vehicle follows another too closely and waiting motorist is not expecting it.

   c. Vision is obstructed by vehicles and a pedestrian may be struck.

Ten-Minute Break
(1:30) 0:10

Records And Reports
(1:40) 0:10

1. **General Considerations**

   a. Information must be obtained and records maintained to:

      1) Provide for continuity of care.

      2) Furnish source of information for evaluating quality of care.

      3) Provide data for analysis of causes, types and degree of illness and injury requiring emergency care.

      4) Furnish legal evidence and EMT-A protection

      5) Provide administrative records.

   b. Although records are important, they never take precedence over emergency care.

Instructor's Notes

Discuss each factor.

Discuss effect of each factor.

Stress danger of emergency vehicle driving to EMT-A patient and others.

Emphasize that emergency vehicles must always pause at intersections to assure safety before proceeding.

Ask class to give examples of true emergencies in which speed might be justified. Discuss and list on chalkboard. Emphasize that, if the problem is controllable, there is no need for speed.

Emphasize importance of accurate objective and precise recording.

Time
(Elapsed)
Actual

Contents

2. **Record Forms.** Record forms vary but certain information is typically obtained; for example:
   a. Patient's name, age, sex, address.
   b. Type of injury or nature of illness.
   c. Mechanism of injury.
   d. Location of patient when first seen—be specific especially if vehicular accident on highway or violent case.
   e. Rescue and treatment measures preceding emergency care.
   f. Findings of primary and secondary survey.
   g. Care given at site or during transport.
   h. Vital signs, patient condition and changes in vital signs during transport.
   i. Hospital to which patient was taken.
   j. Disposition of patient's valuables.
   k. Signature of patient or relatives if patient care is refused.
   l. Procedures followed and disposition of patient in the event of death.
   m. Dying statements.
   n. Circumstances involved in homicide, suicide, rape.
   o. Statements made by patient or others that might serve as legal testimony.
   p. Administrative information, e.g.:
      1) Date of call.
      2) Time of call.
      3) Name and telephone number of caller.
      4) Time of dispatch.
      5) Time of arrival at scene.
      6) Time of leaving scene.
      7) Time of arrival at emergency room.
      8) Time of leaving emergency room.
      9) Time of return to base.
      10) Patient's insurance identification.
      11) Name of dispatch agency.
      12) Names of EMTA's responding to the call.
      13) Type of run to scene-emergency/routine.
      14) Type of run to hospital-emergency/routine.
3. EMT's should not disturb suicide notes and should safeguard homicide weapons for the proper authorities when they are not present at the scene of the emergency.
4. All information obtained should be considered confidential and should be released only to the proper authorities.

Ten-Minute Break
(1:50) 0:10

Communications
(2:00) 0:30

1. **Importance And Uses**
   a. Detection and reporting of accidents.
   b. Assignment of calls to appropriate service providers.
   c. Maintaining contact between the vehicle, dispatcher and hospital.
   d. Alerting of other emergency resources.
   e. Relating information on patient's condition and obtaining information care of patient.
   f. Distributing patients among hospitals.
   g. Alerting hospital emergency departments of type of patient being brought in.
2. **Typical Communications.** Review of typical communications equipment available and procedures used in the area including:
   a. Channel and frequency allocation.
   b. Procedures during each phase of the run.

Instructor's Notes

Distribute and review State or local record forms, typical information obtained and need for the information.

Explain who requires forms, where they are to be left and what data is gathered and its availability.

Distribute typical dispatch form and review with students.

The EMT-A should be aware of the need to maintain the chain of evidence.

Describe how each of the steps in 1 above is handled. Review FCC regulations. Display portable radio and demonstrate local communication procedures.

Time (Elapsed) Actual	**Contents**
	c. Initiating and terminating a call. d. Sequence of patient information. **Note:** Communications systems may vary among communities and students will need to learn specific procedures followed in the area in which they provide services.
Practical Exercises (2:30) 0:20	1. Have each student fill out a trip report form from a written patient description. 2. Have each student provide a radio report based upon the completed trip report form. 3. Have each student select true emergency transport situations from a list of possibilities and justify each.
Summary And Questions (2:50) 0:10	1. Class questions or comments on the topic of the lesson. 2. Demonstration by selected class members of achievement of lesson objectives.
(3:00)	

Question class members on selected objectives.

Lesson 30
Ambulance Operations II

Objectives

At the conclusion of Lesson 30, the instructor will have provided sufficient information, demonstration and practice to the student, to ensure his/her ability to:

- Identify all vehicle systems and equipment requiring daily inspection.
- Identify the proper storage location of all equipment carried on the ambulance.
- Describe the non-medical role of the EMT-A at:
  —Traffic accidents
  —Crime scenes
  —Emergency Department
- List all local and State protocols to be followed during any phase of an ambulance run.
- List at least six of the eight phases of an ambulance run.

Requirements

Material: (One for each student)

- Handouts
  —Vehicle inspection checkoff.
  —Vehicle equipment list.
  —Location of equipment in vehicle.
  Crime scene check off list
  —Local operational protocols.

Equipment: (One of each)

- Ambulance
- 35mm projector
- Movie screen
- Chalkboard

Visual Aids:

- 35mm AAOS slides or similar

Instructors:

- One for lecture and demonstration knowledgeable in all areas of subject matter in this lesson.

Instructor Preparation/Tasks

The Instructor Should:

- Review the lesson outline to assure understanding of contents and procedures.
- Review and preview all references and visual aids selected for the lesson by the course administrator.
- Select and prepare appropriate instructional aids in addition to those provided by the course administrator; if desired.
- Be familiar with all visual aids and other equipment to be demonstrated during the lesson.
- Provide the student with a clear understanding of all operational protocols of his/her ambulance service.

Time (Elapsed) Actual	Contents

Administrative Matters
(--) 0:05

1. Student attendance.
2. Announcements, etc.

Introduction
(0:05) 0:05

1. **Lesson Coverage**
    a. Phases of an ambulance run.
    b. Vehicle inspection and maintenance.
    c. Equipment inspection maintenance and storage.
    d. Functions of the EMT-A during each phase of the ambulance run.
2. **Lesson Objectives**
    a. Identify all vehicle systems and equipment requiring daily inspection.
    b. Identify the proper storage location of all equipment carried on the ambulance.
    c. Describe the non-medical role of the EMT-A at:
        1) Traffic accidents.
        2) Crime scenes.
        3) Emergency department.
    d. List all local and stage protocols to be followed during any phase of an ambulance run.
    e. List the eight phases of an ambulance run.

Phases Of An Ambulance Run
(0:10) 2:30

1. **Pre-Run**
    a. Organization
        1) Personnel
        2) Equipment
        3) Resources
        4) Vehicle
    b. Vehicle maintenance.

General Considerations. The vehicle requires routine maintenance, daily inspection, and inspections after each run.

Daily Inspections. Inspection should include:

a. Inspection of vehicle systems
    1) Fuel
    2) Oil
    3) Fluid circulation system
    4) Battery
    5) Brakes
    6) Tires
    7) Wheels
    8) Headlights
    9) Stop lights
    10) Turn signals
    11) Emergency lights
    12) Wipers
    13) Horn
    14) Siren
    15) Windows
    16) Door closing and latching devices
    17) Communication equipment
    18) Power systems
    19) Air-conditioning, heating and ventilating systems
b. Inspection and inventory of emergency care equipment and supplies.
c. Cleanliness of exterior and interior of vehicle.

Equipment And Maintenance

a. Check and maintained.
b. Restocked and repaired.
c. Standardized placement.

Instructor's Notes

If new instructor, introduce self and instructor aides.

Review lesson coverage and objectives. Emphasize importance of skills and knowledge covered.

Refer to lesson objectives in Student Study Guide and review with class.

Ask class for suggestions. List on chalkboard.

Emphasize importance of having full compliment of all equipment and supplies and of having a standard storage place in the vehicle for each item. Go through vehicle with student.

311

Time (Elapsed) Actual | **Contents**

2. **Dispatch**
   - a. Central access.
   - b. 24-hour availability.
   - c. Trained personnel.
   - d. Dispatch information.
     - 1) Name, location and number of caller.
     - 2) Location of patient.
     - 3) Number of patients and severity.
     - 4) Other special problems, e.g., hazardous material spill.
3. **Enroute**
   - a. Use/non-use of emergency privileges.
   - b. Assignment of personnel.
   - c. Assignment of projected equipment needs.
4. **At Scene**
   - a. Park safely.
   - b. Identify and control hazards.
   - c. Gain access.
   - d. Provide patient care.
   - e. Prepare patient for transport.
   - f. Move to, load and secure patient in ambulance.
5. **Enroute To Hospital**
   - a. Prudent driving.
   - b. Additional care and monitoring.
   - c. Completion of patient forms.
   - d. Notification of hospital.
   - e. Reassuring patient.
6. **At Hospital**
   - a. Transfer of patient.
   - b. Transfer of records.
   - c. Equipment exchange.
7. **Enroute To Station**
   - a. Advise dispatch
   - b. "Straightening" up vehicle
8. **Post Run**
   - a. Inspect and fill vehicle.
   - b. Inspect and restock supplies.
   - c. File reports.
   - d. Clean vehicle.
   - e. Notify dispatch.

Inspections After Each Run

a. There should be a sufficient supply of fuel depending on expected duration of runs.

b. There should be a full supply of emergency care equipment and supplies.

c. The interior of the vehicle and equipment and supplies should be cleaned or decontaminated as necessary.

Summary And Questions
(2:50) 0:10

1. Class questions or comments on the topic of the lesson.
2. Demonstration by selected class members of achievement of lesson.

(3:00)

Instructor's Notes

Provide a 10 minute break at some point during the lecture/discussion.

Gas, oil, water, etc.

Question class members on selected objectives.

Lesson 31
Situational Review

Objectives

At the conclusion of Lesson 31, the instructor will have provided sufficient information, demonstration, and practice to the student, to ensure his/her ability to:

- —Provide in narrative an acceptable description of the functions of an EMT-A in situational examples.

Requirements

There are no special requirements for this lesson.

Instructors:

- —One knowledgeable in all areas of Basic Emergency Medical Technician: National Standard Curriculum.

Instructor Preparation/Tasks

The Instructor Should:

- —Review the lesson outline to assure understanding of contents and procedures.
- —Provide for the student, using the field situations in Lesson 31 of the Student Study Guide, a comprehensive review of all subject matter covered in Lessons 1 through 30 of the Basic Emergency Medical Technician: National Standard Curriculum.

Time (Elapsed) Actual	**Contents**
Administrative Matters (--) 0:05	1. Student attendance. 2. Announcements, etc.
Introduction (0:05) 0:05	
Situational Review (0:10) 2:35	Note: The situations listed below have been developed to aid the instructor in providing an integration and review of course contents. Included also are examples of questions that the instructor might pose to the class. The questions posed do not necessarily have clear-cut answers, rather, they are designed to stimulate class discussion. The instructor should feel free to draw on his own experieces in developing situations if he so desires. The instructor should assure that all class members participate in the discussion.

Situation #1

An ambulance is the first emergency vehicle to arrive at the scene of a two-car collision. Both cars are upright. A quick survey of life-threatening problems has revealed the following patients:

Car 1: The driver is unconscious and seated in the front seat fastened in his seat belt. The head of the passenger in the front seat has been thrown through the windshield. He is bleeding profusely about the face, is unconscious and his respirations are shallow.

Car 2: The driver is seated in the front seat. He is sweating and appears to be short of breath. He complains of pain in his chest and left arm. The passenger has been thrown from the car. He is lying on the road moaning that he cannot move his legs. He appears to feel no sensation in his legs.

Questions:

a. What might be wrong with each patient?
b. Which two patients (there are two EMT-A's) should be treated first and why?
c. What care should be given to each patient?
d. Which two patients should be transported first and why?
e. Would it be necessary to alert the hospital and why?
f. Would the trip to the hospital be made with utmost speed and why?

Situation #2

An unconscious person is found on a city street. His skin is pale and moist and his pulse is rapid. He is having convulsions.

Questions:

a. What might be wrong with the patient?
b. What should be searched for?
c. What care should be given to the patient?

Situation #3

There has been a brawl at the local tavern. One patient is lying on the floor with a knife in his chest. He is bleeding profusely and coughing up frothy blood. Patient No. 2 is unconscious, his respirations shallow, his pulse weak, and blood is dripping from his ears and nose. Patient No. 3 has an angulated compound fracture of the tibia and is bleeding profusely at the fracture site.

Review lesson objective.

Hand out prepared list of situational examples. Read the first example out loud. Ask the first question and discuss responses. Continue through the list of questions and situations.

Include two 10-minute breaks during the discussion sesion.

Questions:

a. What is most likely wrong with patient No. 1?
b. What is most likely wrong with patient No. 2?
c. Which two patients should be cared for first and why?
d. Should help be enlisted in caring for the patients?
e. What care should be provided for each patient?
f. Which two patients should be transported first and why?
g. Would it be necessary to alert the hospital and why?
h. Should the trip to the hospital be made with utmost speed and why?

Situation #4

A man has barricaded himself in the bathroom. There have been sounds of water running. When you arrive at the man's apartment, the police have just succeeded in opening the bathroom door. They tell you they have heard no sounds for five minutes. You find the patient face down in the bathtub. He is not breathing, has no pulse and his pupils are dilated and fixed.

Questions:

a. What care should be provided for the patient?
b. You have performed cardiopulmonary resuscitation on the patient for 10 minutes without reviving him. Should you cease your efforts and why?
c. What information should you obtain and to whom should you give it?

Situation #5

You are returning from the hospital and a violent thunderstorm erupts. You come across a car on which some electric wires have fallen. The driver is opening the front door of the car.

Question:

a. What should be done and why?

Situation #6

You have taped up a sucking chest wound and are transporting the patient to the hospital. You notice that the patient's respirations are worsening.

Questions:

a. What would you suspect is wrong with the patient?
b. What would you do?

Situation #7

You arrive at a private home and find a woman ranting that her husband plans to kill her and she is going to throw acid at him. You try to calm her from a distance and to keep her husband at a distance. However, he approaches her and she throws the acid in his face.

Questions:

a. What would you suspect is wrong with the wife?
b. How would you care for the husband and wife?
c. What would you do about transporting the two patients?
d. What information should you be sure to obtain and to whom should you give it?

Situation #8

You have been called to a building where there is no known elevator. There is a patient on the third floor having a severe asthmatic attack.

Questions:

a. When you leave the ambulance, what equipment should you take with you and why?

b. When you see the patient, you administer oxygen and his respirations worsen. What would you suspect is wrong and why?

c. How would you carry this person?

d. How would you care for him enroute?

Situation #9

You have been called to take a pregnant woman to the hospital to have a baby.

Questions:

a. When you leave the ambulance, what equipment should you take with you and why?

b. What questions would you ask to determine whether delivery is imminent?

c. You find the infant is crowning when you arrive. What should you do to assist her in the delivery?

d. How should you care for the baby?

Situation #10

An unconscious patient has severe third-degree burns of the head, face and neck. His respirations are irregular and his pulse is weak.

Questions:

a. How would you care for the patient?

b. What percentage of the patient is burned?

Situation #11

You are following a car that veers suddenly onto the shoulder of a limited access highway, up an embankment, turns over onto its roof. You can see two people inside dangling in their seat belts and shoulder harnesses.

Questions:

a. What should be done first and why?

b. You have assured that the vehicle is shored up and stable. You find the door on the driver's side unlocked, and you open it to gain access to the victims. What should you do next and why?

c. You find each occupant unconscious. Each is breathing and has no obvious open wounds. How would you remove them from their belts and harnesses?

d. From the information presented, what might have happened to the driver? How would you check?

Situation #12

The windshield of a vehicle is smashed and the driver has a large piece of glass penetrating his left cheek and is bleeding profusely from the left cheek and forehead. He is unconscious and fastened in his seat belt.

Questions:

a. How would you care for the patient?

b. What other injuries might you suspect the patient to have and how would you check for them?

Situation #13

A car has been traveling slowly when it suddenly veers off the road, grazes a tree and comes to rest against another tree. The driver is barely conscious. He does not speak and appears to have no feeling on one side of his body.

Questions:

a. What is most likely wrong with the driver?

b. How would you care for him?

Time (Elapsed) Actual	Contents
	Situation #14 The driver is unconscious. He is fastened in his seat belt. There is dark red blood oozing from his mouth. The passenger in the front seat has an open fracture of the left tibia and is bleeding profusely at the fracture site. **Questions:** a. What is most likely wrong with driver? b. Which patient would you care for first and why? c. How would you care for each patient? d. While you are working on these patients, you hear a moan and discover a child on the floor of the back seat. You have to remove one patient from the vehicle to gain access to the child. Which patient would you move? How would you move him? e. The child is barely conscious and has a closed angulated fracture of the shaft of the humerus. How would you care for him? **Situation #15** Smoke is coming from a structural fire. On entering the doorway, you notice a placard indicating a radiation source is present and see a man lying on the floor 20 feet away. **Questions** a. What environmental hazards are likely? b. What safety precautions should be taken? c. What modifications should be made in usual patient care and transportation?
Summary And Questions (2:45) 0:15 (3:00)	1. Ask students if they have any questions prior to their final written and practical examination.

Instructor's Notes

322

Lesson 32
Final Written Test

Objectives

The instructor will provide and administer a written examination which allows the student to:

—Successfully complete a written examination reflecting the knowledge taught in the entire Basic Emergency Medical Technician: National Standard Curriculum.

NOTE: It is assumed that Lesson 32 and 33 are end of the course examinations designed to determine successful course completion and eligibility for formal examination by a State or national agency for licensure or certification. Policies vary. Check with the State EMS office.

Requirements

Material: (one for each student)

—A written examination reflecting the knowledge taught in the entire Basic Emergency Medical Technician: National Standard Curriculum (3d Edition 1983).

Instructors:

- One to monitor written exam.

Instructor Preparation/ Tasks

The Instructor Should:

- Review the lesson outline to assure understanding of contents and procedures.
- Monitor the final written examination, provide instructions and answer any student's question during the allotted time frame.

Time (Elapsed) Actual	**Contents**
Administrative Matters (––) 0:05	1. Student attendance. 2. Announcements, etc.
Test Administration (0:05) 1:55	
(2:00)	

Distribute test. Explain procedures for taking the test. Collect completed papers.

Lesson 33
Final Practical Evaluation of Skills

Objectives

The instructor will provide and administer a practical examination which allows the student to:

- Successfully demonstrate through practical application on appropriate programmed patients or manikins, any of the skills taught in the entire Emergency Medical Technician—Ambulance: National Standard Curriculum.

  NOTE: It is assumed that Lesson 32 and 33 are end of course examinations designed to determine successful course completion and eligibility for formal examination by a State or national agency for licensure or certification. Policies vary. Check with the State EMS office.

Requirements

Equipment:

- Oxygen equipment and delivery system (one for each six students).
- Adult resuscitation manikin (one for each six students).
- Paper cut/cone or eye shield (one for each two students).
- Universal dressings (one for each two students).
- 4 × 4 gauze pads (one for each student).
- Rigid splints (one for each three students).
- Traction splints (one for each three students).
- Long board splint (one set for each three students).
- Long backboard/straps (one for each six students).
- Short backboard/straps (one for each six students).
- Sphygmomanometer and stethoscope (one for each six students).
- Sterile delivery pack (one for each six students).
- Makeup kits (one for each six students).
- Blanket (one for each three students).
- Cervical collar (one for each six students).
- Roller-type bandages (one for each two students).
- Triangular bandages (four for each student).
- Bandage sheers (one for each four students).
- Stretcher (one for each six students).
- Obstetrical manikin (one for each six students).
- Roll adhesive tape (one for each six students).
- Blankets (one for each two students).
- Drop cloth (one for each six students).

Instructor Preparation/ Tasks

The Instructor Should:

- Review the lesson outline to assure understanding of contents and procedures.
- Provide instructions and direct students during the final practical examination.
- Brief all instructor aides as to their roles and responsibilities during the lesson.

  NOTE: Additional instructor aides should be available to serve as victims for evaluation of the skill of patient examination.

  NOTE: If there are fewer instructors or less equipment than specified, additional time will be required for this lesson.

In order to assure that all students are evaluated in the same manner, the instructor shoud have a checklist on which he can check off the principal features of the skill to be evaluated. This checklist essentially comprises the student's evaluation sheet. It is assumed that the checklist will be prepared by the instructor and course administrator.

At this point, a library of checklists for the emergency care course should be available since they have been developed for four previous practice, test and evaluation sessions. All instructors should be briefed on checklist use.

Detailed procedures are not specified for the lesson since they will vary depending on the number of students in the class, the number of instructors and the amount of material available. it is suggested that the instructors divide among themselves the skills to be evaluated. In effect, the lead instructor should set up test stations. He should also assure that all materials required for the lesson are available.

All instructors should be thoroughly briefed on their responsibilities. Each instructor should review all lesson plans and all references for the emergency care course.

Instructor's Notes

Time
(Elapsed)
Actual

Contents

Administrative Matters
(--) 0:05

1. Student attendance.
2. Announcements, etc.

Evaluation of Skill Objectives
(0:05) 2:55

1. As a minimum, the instructor should use a checklist in evaluating student proficiency in performing the following skills:
    - a. **Patient Examination, Including Vital Signs.** Working on simulated victims, each student should perform patient examinations and provide proper emergency care.
    - b. **Oxygen Equipment.** Working on a manikin or instructor, each student should set up, administer and close down oxygen equipment.
    - c. **Bandaging.** Each student should bandage a sucking chest wound or an abdominal evisceration on a simulated patient.
    - d. **Fractures.** Working in pairs on a simulated patient, students should apply both a traction splint and a long board splint to immobilize a fracture of the femur. Each student should perform in both positions (e.g., maintaining traction and applying the splint).
    - e. **Two-Rescuer Cardiopulmonary Resuscitation.** Working in pairs, students should demonstrate successful cardiopulmonary resuscitation of an adult manikin for a minimum of two minutes. Performance should include changing positions.
    - f. **Lifting and Moving.** Working on an instructor or fellow student, each PAIR of students should lift the patient from the floor, using a direct ground lift, and position him properly on a stretcher.
    - g. **Immobilization of a Patient on a Short and/or Long Spineboard.** Working on an instructor or fellow student, each PAIR of students should move a patient with a suspected spine fracture from the floor to a long backboard.
    - h. **Pneumatic Counter Pressure Device (MAST).** Working on a manikin or simulated patient in pairs, each student should correctly position and prepare to inflate the Pneumatic Counter Pressure Device.

    NOTE: Pneumatic Counter Pressure Device should not be inflated on uninjured persons.

(3:00)

Explain procedure to be followed in the evaluation session.

Appendix A
American Heart Association CPR Guidelines

Cardiopulmonary Resuscitation and Emergency Cardiac Care Performance Sheet

One and Two Rescuer CPR

Name ______________________________ Date ____________

STEPS	ACTIVITY AND TIME (Seconds)	CRITICAL PERFORMANCE	RATIONALE	*S	*U
1	Establish unresponsiveness and call out for help. Allow 4-10 sec. if face down and turning is required.	Tap, gently shake shoulder. Shout — "Are you OK?" Call out — "Help!" Turn if necessary, supporting head and neck.	Accurate diagnosis is important. Frequently victim will be face down. Effective external chest compression can only be provided with victim flat on back on hard surface.		
		Adequate time.	4 to 10 seconds gives time for diagnosis and to review mentally the sequence of CPR.		
2	Open airway. Establish breathlessness. (Look, listen, and feel.) (3-5 sec.)	Kneels properly.	Position for stability and access to the victim.		
		Utilize head tilt with chin lift (or head tilt with neck lift).	Airway must be opened to establish breathlessness.		
		Ear over mouth, observe chest: look, listen, and feel for breathing.	Many victims may be making respiratory efforts that are ineffective because of obstruction.		
3	Four ventilations. (3-5 sec.)	Ventilate properly 4 times and observe chest rise.	Need to expand collapsed lungs but avoid gastric distention.		
4	Establish pulselessness. Activate EMS System. (5-10 sec.)	Fingers palpate for carotid pulse on near side (other hand on forehead maintains head tilt).	The carotid pulse is the easiest to find. It is checked on the near side to avoid pressure on the windpipe.		
		Know local EMS Number and send a bystander to call EMS.	The sooner ACLS arrives the better chance for survival.		
		Adequate time.	It takes 5-10 seconds to find the right place, and the pulse may be very slow or very weak and rapid.		
5	Four cycles of 15 compressions and 2 ventilations. (54-66 sec.)	Proper rescuer body position.	Stability and access for ventilation and compression.		
		Landmark check each time.	To assure proper hand position.		
		Position of hands.	Precision in hand placement is essential to avoid serious injury.		
		Vertical compression/ no bouncing.	To achieve most pressure with least effort.		
		Says mnemonic.	Necessary to establish rhythm.		
		Proper rate and ratio.	Should attempt to accomplish 60 compressions and 8 ventilations per minute, 50% of compression is downward and 50% is upward.		
		Ventilates properly.	Adequate oxygenation must be maintained.		
6	Check for return of pulse and spontaneous breathing. (3-5 sec.)	Check pulse and breathing.	Victim's status needs to be evaluated after the first minute of CPR and every few minutes thereafter.		
7	1st rescuer resumes CPR with 2 ventilations followed by compressions.	Resume as single rescuer.	CPR must not be interrupted.		

Performance Sheet

One and Two Rescuer CPR (continued)

STEPS	ACTIVITY AND TIME (Seconds)	CRITICAL PERFORMANCE	RATIONALE	*S	*U
8	2nd rescuer identifies himself, checks pulse for effective compressions. (5 sec.)	2nd rescuer says, "I know CPR." Palpates carotid pulse.	Second rescuer identifies knowledge and willingness to assist. 1st rescuer accepts assistance. 2nd rescuer evaluates effectiveness of compressions.		
9	2nd rescuer calls out "Stop compressions" and checks for spontaneous pulse and breathing. (5 sec.)	2nd rescuer — 5 sec. spontaneous pulse and breathing check.	Provides a second assessment of pulse and breathing and verifies the need for continued CPR.		
10	Second rescuer ventilates once. States "No pulse. Continue CPR."	Ventilates properly and observes chest rise.	Oxygen should be delivered to the lungs prior to chest compression.		
11	First rescuer resumes compressions.	Two-rescuer rate and ratio.	2nd rescuer ventilation triggers change of rate and ratio.		
12	Minimum of two cycles of five compressions and one ventilation. (8-10 sec.) Switch and repeat until examiner is satisfied.	Correct rate of compression.	When performed without interruptions, 60 compressions per minute can maintain adequate blood flow and pressure. The rate avoids fatigue and allows optimal ventilation with quick interposition on upstroke of fifth compression.		
		Says mnemonic.			
		Interposes breath.			
		No pause for ventilations.			
13	Compressor calls for switch when needed.	Calls for switch.	Signal for change must be clear to avoid confusion.		
14	*Simultaneous switch.* Rescuer at head moves to chest.	Gives breath on 5th compression.	Switch must be performed quickly and smoothly to maintain effective CPR. Check for return of spontaneous pulse/breathing to verify need for continued CPR. Oxygen should be delivered to the lungs prior to resuming chest compression.		
		Moves to the chest.			
		Finds correct hand position ready for chest compression.			
	Compressor moves to head.	Gives 5th compression.			
		Moves to the head. 3-5 sec. pulse check.			
		Ventilates once.			
		States, "No pulse, continue CPR."			
		Monitors compression effectiveness.	Verifies effective chest compression.		

INSTRUCTOR ______________________ (Check) *(S) Satisfactory ___ *(U) Unsatisfactory ___

Cardiopulmonary Resuscitation and Emergency Cardiac Care Performance Sheet

One Rescuer CPR (Heartsaver)

Name ______________________________ Date ______________

STEPS	ACTIVITY AND TIME (Seconds)	CRITICAL PERFORMANCE	RATIONALE	*S	*U
1	Establish unresponsiveness and call out for help. Allow 4-10 sec. if face down and turning is required.	Tap, gently shake shoulder. Shout — "Are you OK?" Call out — "Help!" Turn if necessary, supporting head and neck.	Accurate diagnosis is important. This initial call for help is to alert bystanders. Frequently victim will be face down. Effective external chest compression can only be provided with victim flat on back on hard surface.		
		Adequate time.	4 to 10 seconds gives time for diagnosis and to review mentally the sequence of CPR.		
2	Open airway. Establish breathlessness. (Look, listen, and feel.) (3-5 sec.)	Kneels properly.	Position for stability and access to the victim.		
		Utilize head tilt with chin lift (or head tilt with neck lift).	Airway must be opened to establish breathlessness.		
		Ear over mouth, observe chest: look, listen, and feel for breathing.	Many victims may be making respiratory efforts that are ineffective because of obstruction.		
3	Four ventilations. (3-5 sec.)	Ventilate properly 4 times and observe chest rise.	Need to expand collapsed lungs but avoid gastric distention.		
4	Establish pulselessness. Activate EMS System. (5-10 sec.)	Fingers palpate for carotid pulse on near side (other hand on forehead maintains head tilt).	The carotid pulse is the easiest to find. It is checked on the near side to avoid pressure on the windpipe.		
		Know local EMS Number and send a bystander to call EMS.	The sooner ACLS arrives the better chance for survival.		
		Adequate time.	It takes 5-10 seconds to find the right place, and the pulse may be very slow or very weak and rapid.		
5	Four cycles of 15 compressions and 2 ventilations. (54-66 sec.)	Proper rescuer body position.	Stability and access for ventilation and compression.		
		Landmark check each time.	To assure proper hand position.		
		Position of hands.	Precision in hand placement is essential to avoid serious injury.		
		Vertical compression/ no bouncing.	To achieve most pressure with least effort.		
		Says mnemonic.	Necessary to establish rhythm.		
		Proper rate and ratio.	Should attempt to accomplish 60 compressions and 8 ventilations per minute, 50% of compression is downward and 50% is upward.		
		Ventilates properly.	Adequate oxygenation must be maintained.		
6	Check for return of pulse and spontaneous breathing. (3-5 sec.)	Check pulse and breathing.	Victim's status needs to be evaluated after the first minute of CPR and every few minutes thereafter.		
7	Resume cycles with 2 ventilations followed by compressions.	Continue CPR in absence of spontaneous pulse respirations.	CPR should be continued until victim responds or rescuer is relieved or exhausted.		

INSTRUCTOR ______________________________ (Check) *(S) Satisfactory ____ *(U) Unsatisfactory ____

Cardiopulmonary Resuscitation and Emergency Cardiac Care Performance Sheet

Infant Resuscitation

Name ______________________________ Date ____________

STEPS	ACTIVITY AND TIME (Seconds)	CRITICAL PERFORMANCE	RATIONALE	*S	*U
1	Establish unresponsiveness and call out for help (including turning). (4-10 sec.)	Tap, gently shake shoulder, and see if infant responds. Call out — "Help!" Turn if necessary.	Diagnosis must be equally accurate in children and infants. With this emotionally charged situation, time must be taken to establish the diagnosis of unresponsiveness or breathing difficulty.		
		Infant horizontal.	Horizontal position aids effective circulation.		
		Adequate time.	4-10 seconds gives time for diagnosis and to review mentally the sequence of CPR.		
2	Open airway. Establish breathlessness. (Look, listen, and feel.) (3-5 sec.)	Tip head back. Do not hyperextend.	Hyperextension can collapse trachea or cause cervical spine injury.		
		Put ear over mouth and look toward chest to look, listen and feel for breathing.	Many victims may be making respiratory efforts that are ineffective because of obstruction.		
3	Four ventilations. (3-5 sec.)	Cover mouth and nose, give 4 breaths in rapid succession, enough to observe chest rise.	Lung capacity of infant smaller than adult, more pressure is required. Avoid over-inflating to prevent gastric distention.		
4	Establish pulselessness and activate EMS System. (5-10 sec.)	Fingers palpate for brachial pulse in infant.	Brachial pulse easier to feel in infant than cartoid.		
		Know local EMS number and send a bystander to call.	The faster ACLS arrives the better the chance for survival.		
5	10 cycles of 5 compressions and 1 ventilation. Continue uninterrupted. (30 sec.)	Two fingers on midsternum for compressions at rate of 100 compressions per minute.	Infants (rate of 100/min) need a more rapid chest compression rate with breaths interposed every 5 compressions.		
6	Check for return of spontaneous pulse and breathing. (3-5 sec.)	Check pulse and breathing properly.	Frequent reassessment of the victim's condition is necessary.		

INSTRUCTOR ______________________________ (Check) *(S) Satisfactory ____ *(U) Unsatisfactory ____

Cardiopulmonary Resuscitation and Emergency Cardiac Care Performance Sheet

Complete Airway Obstruction

Name ______________________________ Date ______________

Part I—Conscious Victim (Sitting or Standing)

STEPS	ACTIVITY AND TIME (Seconds)	CRITICAL PERFORMANCE	RATIONALE	*S	*U
1	Rescuer asks: "Can you speak?" (2-3 sec.)	Rescuer must identify complete airway obstruction by asking victim if he is able to speak.	It is essential to recognize the signs and take immediate action. If the victim is able to speak or cough effectively, do not interfere with his attempts to expel the foreign body.		
2	4 Back Blows** (3-5 sec.) *Do not apply actual back blows to other students.*	Deliver 4 sharp blows rapidly and forcefully to the back between the shoulder blades; support the victim's chest with other hand.	Back blows may have the effect of dislodging the foreign body. Chest support is necessary to prevent the victim from falling forward. Whenever possible, the victim's head should be lower than his chest to make use of the effect of gravity.		
3	4 Abdominal Thrusts (4-5 sec.) OR	Stand behind victim and wrap your arms around his waist. Grasp one fist with your other hand and place thumb side of your fist in the midline between the waist and ribcage. Press fist into abdomen with quick inward and upward thrusts.	Manual thrust maneuver should move the foreign body upward in the airway. Each back blow or manual thrust should be delivered with the intent of relieving the obstruction.		
	4 Chest Thrusts (4-5 sec.) *Do not apply actual manual thrusts to other students.*	Stand behind victim and place your arms under victim's armpits to encircle the chest. Grasp one fist with other hand and place thumb side of fist on breastbone. Press with quick backward thrusts.	Chest thrusts are more easily delivered than are abdominal thrusts when the abdominal girth is large, as in gross obesity or in advanced pregnancy.		
4	Repeat above sequence until successful. (Steps 2-3)	Alternate the above maneuvers in rapid sequence until successful or the victim becomes unconscious.	Time is of the essence; the two techniques are rapidly repeated alternatively until obstruction is relieved or unconsciousness occurs.		

Performance Sheet

Complete Airway Obstruction

Part II — Victim Who Becomes Unconscious

Page 2

STEPS	ACTIVITY AND TIME (Seconds)	CRITICAL PERFORMANCE	RATIONALE	*S	*U
1	Position the victim and call for help. Allow 4-10 sec. if face down and turning is required.	Turn victim supine if necessary. Call out for help. Support head and neck.	Initial call is to alert bystander. Victim must be properly positioned in case CPR is required. Support head/neck to prevent injury.		
		Adequate time.			
2	Open airway and attempt to ventilate. (3-5 sec.) (Repositioning of the head and a second attempt to ventilate is optional and acceptable.)	Kneel properly — utilize head tilt with chin lift (or head tilt with neck lift). Attempt ventilation. (Airway still obstructed.)	Lack of oxygen or falling and jarring motion may loosen foreign body enough to permit ventilation.		
3	Activate EMS System. (2 sec.)	If second person is present he should activate EMS System. Know local EMS number.	Advanced life support capability may be required.		
4	4 Back Blows** (4-6 sec.) *Do not apply actual back blows to other students.*	Roll victim toward you, using your thigh for support. Give 4 forceful and rapidly delivered blows to back between shoulder blades.	Continually check for success. Each back blow or manual thrust should be delivered with the intent of relieving the obstruction.		
5	4 Abdominal Thrusts (5-6 sec.) OR	Position yourself with your knees close to victim's hips. Place heel of one hand in the midline between the waist and ribcage and second hand on top. Press into abdomen with quick inward and upward thrusts. This maneuver may be done astride the victim.	Kneeling at victim's side gives the rescuer greater mobility and access to the airway. The sequence of back blows and abdominal thrusts is more effective than either method when used alone.		
	4 Chest Thrusts (5-6 sec.) *Do not apply actual manual thrusts to other students.*	Same hand position as that for applying external chest compression. Exert quick downward thrusts.	Chest thrusts are preferred in the presence of large abdominal girth (advanced pregnancy and obesity). Quick downward thrusts generate effective airway pressures.		
6	Check for foreign body using finger sweep. (6-8 sec.)	Turn head up, open mouth with jaw-lift technique and sweep deeply into mouth along cheek with hooked finger. May need to remove dentures.	A dislodged foreign body may now be manually accessible if it has not been expelled. Dentures may need to be removed to improve fingersweep.		
7	Attempt to ventilate. (3-5 sec.)	Utilize head tilt with chin lift (or head tilt with neck lift). Attempt ventilation. (Airway still obstructed.)	By this time another attempt must be made to get some air into the lungs.		
8	Repeat above sequence until successful. (Steps 4-7)	Alternate the above maneuvers in rapid sequence until successful.	Persistent attempts are rapidly made in sequence in order to relieve the obstruction.		

**NOTE: Although the above sequence of back blows followed by manual thrusts is preferred, the reverse sequence of manual thrusts followed by back blows is acceptable.

INSTRUCTOR ____________________ (Check) *(S) Satisfactory ____ *(U) Unsatisfactory ____

Cardiopulmonary Resuscitation and Emergency Cardiac Care Performance Sheet

Obstructed Airway Unconscious Victim, Supine

Name ________________________________ Date ____________

STEPS	ACTIVITY AND TIME (Seconds)	CRITICAL PERFORMANCE	RATIONALE	*S	*U
1	Establish unresponsiveness and call out for help. Allow 4-10 sec. if face down and turning is required.	Tap, gently shake shoulder. Shout — "Are you OK?" Call out — "Help!" Turn if necessary, supporting head and neck.	Accurate diagnosis is important. This initial call for help is to alert bystanders. CPR can only be performed with victim supine on firm flat surface.		
		Adequate time.			
2	Open airway. Establish breathlessness. (Look, listen, and feel.) (3-5 sec.)	Kneels properly.	Position for stability and access.		
		Utilize head tilt with chin lift (or head tilt with neck lift).	Airway must be opened to establish breathlessness.		
		Ear over mouth, observe chest: look, listen, and feel for breathing.	Many victims may be making respiratory efforts that are ineffective because of obstruction.		
3	Attempt to ventilate. (3-5 sec.)	Attempt ventilation. (Airway obstructed.)	An attempt must be made to get some air into the lungs.		
4	Reattempt ventilation. (3-5 sec.)	Reposition head. (airway remains obstructed)	Improper head tilt is most common cause of airway obstruction. Airway obstruction is confirmed and assumed to be a foreign body.		
5	Activate EMS System. (2 sec.)	If a second rescuer is present, he should activate the EMS System. Know local EMS number.	Advanced life support capability may be required.		
6	4 Back Blows** (4-6 sec.) *Do not apply actual back blows to other students.*	Roll victim toward you, using your thigh for support. Give 4 forceful and rapidly delivered blows to back between shoulder blades.	Continually check for success. Each back blow or manual thrust should be delivered with the intent of relieving the obstruction.		
7	4 Abdominal Thrusts (5-6 sec.) OR	Position yourself with your knees close to victim's hips. Place heel of one hand in the midline between the waist and ribcage and second hand on top. Press into abdomen with quick inward and upward thrusts. Maneuver may be done astride victim.	Kneeling at victim's side gives the rescuer greater mobility and access to the airway. The sequence of back blows and manual thrusts is more effective than either technique when used alone.		
	4 Chest Thrusts (5-6 sec.) *Do not apply actual manual thrusts to other students.*	Same hand position as that for applying chest compression. Exert quick downward thrusts.	Chest thrusts are preferred in the presence of large abdominal girth (advanced pregnancy and obesity). Quick downward thrusts generate effective airway pressures.		
8	Check for foreign body using finger sweep. (6-8 sec.)	Turn head up, open mouth with jaw-lift technique and sweep deeply into mouth with hooked finger of other hand. May need to remove dentures.	A dislodged foreign body may now be manually accessible if it has not been expelled. Dentures may need to be removed to improve fingersweep.		
9	Attempt to ventilate. (3-5 sec.)	Utilize head tilt with chin lift or head tilt with neck lift. Attempt ventilation. (Airway remains obstructed.)	By this time another attempt must be made to get some air into the lungs.		
10	Repeat above sequence until successful (Steps 6-9)	Alternate the above maneuver in rapid sequence until successful.	Persistent attempts are rapidly made in sequence to relieve the obstruction.		

**NOTE: Although the above sequence of back blows followed by manual thrusts is preferred, the reverse sequence of manual thrusts followed by back blows is acceptable.

Cardiopulmonary Resuscitation and Emergency Cardiac Care Performance Sheet

Complete Obstruction Conscious Choking Infant

Name ______________________________ Date ____________

STEPS	ACTIVITY AND TIME (Seconds)	CRITICAL PERFORMANCE	RATIONALE	*S	*U
1	Rescuer checks for airway obstruction. (2-3 sec.)	Rescuer must identify complete obstruction by looking, listening and feeling for ventilation and for blueness of the lips.	The presence of complete airway obstruction must be properly diagnosed before proceeding with treatment.		
2	4 Back Blows. (3-5 sec.)	While supporting the head, the infant is straddled over the rescuer's arm with the head lower than the trunk. The 4 back blows are delivered rapidly and forcefully between the shoulder blades.	Back blows when used alone may relieve the obstruction. Each blow should be delivered with the intent of relieving the obstruction.		
3	4 Chest Thrusts. (3-5 sec.)	While supporting the head, the infant is sandwiched between 2 hands, turned onto the back, and the thrusts are delivered in the midsternal region in the same manner as external chest compression. The head is lower than the trunk.	The combination of back blows and chest thrusts is superior to one technique when used alone. Abdominal thrusts are not recommended in infants because of the potential injury to the abdominal organs.		
4	Repeat above sequence until successful. (Steps 2-3)	Repeat above maneuvers until successful or the infant becomes unconscious.	Time is of the essence. The two techniques are rapidly repeated alternatively until obstruction is relieved or unconsciousness occurs.		

INSTRUCTOR ______________________________ (Check) *(S) Satisfactory ___ *(U) Unsatisfactory ___

Cardiopulmonary Resuscitation and Emergency Cardiac Care Performance Sheet

Complete Obstruction Choking Infant Who Becomes Unconscious— Or Is Found Unconscious

Name ______________________________ Date ____________

STEPS	ACTIVITY AND TIME (Seconds)	CRITICAL PERFORMANCE	RATIONALE	*S	*U
1	Establish unresponsiveness. Call for help. Turn victim. (4-10 sec.)	Gently shake, tap, call out for help. Turn infant horizontal and supine. Support head and neck.	An accurate diagnosis of unresponsiveness must be made before resuscitation begins or continues.		
2	Open airway. Establish breathlessness. (Look, listen, and feel.) (3-5 sec.)	Tip head back, do not hyperextend. Rescuer looks toward chest with ear over mouth to look, listen and feel for breathing. Utilize head tilt-chin lift (or head tilt-neck lift).	Hyperextension of the head can collapse the trachea or cause cervical spine injury in the infant. An accurate diagnosis must be made to establish the presence of cardiopulmonary arrest or airway obstruction.		
3	Attempt to ventilate. (3-5 sec.)	Ventilate (airway obstructed).	An attempt must be made to get some air into the lungs.		
4	Reattempt to ventilate. (3-5 sec.)	Reposition the head. (Airway obstructed.)	Improper head tilt is the most common cause of airway obstruction. Airway obstruction is confirmed and is assumed to be a foreign body.		
5	Activate EMS System. (2 sec.)	If a second rescuer is present he should activate the EMS System. Know local EMS number.	ALS capability will be needed.		
6	4 Back Blows. (3-5 sec.)	While supporting the head, the infant is straddled over the rescuer's arm with the head lower than the trunk. The 4 back blows are delivered rapidly and forcefully between the shoulder blades.	Back blows when used alone may relieve the obstruction. Each blow should be delivered with the intent of relieving the obstruction.		
7	4 Chest Thrusts. (3-5 sec.)	While supporting the head, the infant is sandwiched between 2 hands, turned onto the back, and the thrusts are delivered in the midsternal region in the same manner as external chest compression. The head is lower than the trunk.	The combination of back blows and chest thrusts is superior to one technique when used alone. Abdominal thrusts are not recommended in infants because of the potential injury to the abdominal organs.		
8	Tongue-Jaw Lift. (6-8 sec.)	Thumb in victim's mouth over tongue. Lift tongue and jaw forward with fingers wrapped around lower jaw. Remove foreign body *if visualized*.	Blind finger sweeps are to be avoided in the infant since the foreign body can easily be pushed back and cause further obstruction.		
9	Attempt to Ventilate. (3-5 sec.)	Ventilate (airway remains obstructed).	An attempt must be made to get air into the lungs.		
10	Repeat above sequence until successful. (Steps 6-9)	Alternate the above maneuvers in rapid succession until successful.	Persistent attempts are rapidly made in sequence to relieve the obstruction.		

INSTRUCTOR ______________________________ (Check) *(S) Satisfactory ____ *(U) Unsatisfactory ____

Appendix B
Bibliography

The Primary Medical References Used in the Development of this Instructor's Lesson Plan

Committee on Allied Health, American Academy of Orthopaedic Surgeons: *Emergency Care and Transportation of the Sick and Injured.* 3d Edition, Menasha, Wis., 1981, Banta Co.

Standards for Cardiopulmonary Resuscitation (CPR) and *Emergency Cardiac Care* (ECC), JAMA, 244 (Supplement); 453-478, 1980.

Other References:

Grant, H. D., Murray, R. H., and Bergeron, J.D.: *Emergency Care;* 3d Edition, Bowie, Md., 1982, Brady Co.

Hafen, B. Q., Karren, K. J., and Uber, K.: *Prehospital Emergency Care and Crisis Intervention:* Denver, Colo., 1981, Morton Co.

Ohio Trade and Industrial Education Service, State Department of Education: *Emergency Victim Care:* 4th Revision, Columbus, Ohio, 1981.

Barber, J. M. and Dillman, P. A.: *Emergency Patient Care:* Reston, Va., 1981, Reston Co.

Mitchell, J. T. and Resnik, H. L. P.: *Emergency Response to Crisis:* Bowie, Md., 1981, Brady Co.

Note: The listing of references does not imply approval or endorsement by the Department of Transportation. Check with the State EMS office for a list of approved textbooks.

Appendix C
In-Hospital Clinical Guidelines

Basic Emergency Medical Technician:
National Standard Curriculum
In-Hospital Clinical Guidelines

Note: All of the following are to be carried out under the supervision of a Registered Nurse on that unit or the patient's physician in accordance with hospital policy.

I. Tour the Emergency Room, Intensive Care Unit, Operating Room, and Maternity Unit. Obtain and record at least one set of vital signs in each of the above named areas of the hospital.

Vital signs include: Blood pressure.
Pulse.
Respirations
Temperature.

II. The following can be completed under supervision when the opportunity presents itself.

- A. Obtain and record neurological signs (level of consciousness, pupil reaction to light, grip).
- B. Observe an intravenous line being started and see how it is secured in place.
- C. Observe the administration of an injection.
- D. Administer oxygen to a patient.
- E. Accompany a patient to a specific procedure (example: X-ray, physical therapy, etc.)

III. The following objectives are for the specific units indicated.

- A. Emergency Room (P.M. shift recommended).
  - 1. Observe the unloading procedure of a patient from an ambulance.
  - 2. Observe the care given to a patient with chest pain.
  - 3. Observe and participate in the cleansing and bandaging of wounds.
  - 4. Observe and participate in the application of a cast.
  - 5. Observe and participate in techniques used in transferring a patient from an ambulance cot to an Emergency Room cart.
  - 6. Accompany an Emergency Room staff member in transporting a patient to his room for admission to the hospital.
  - 7. Observe the care given to a patient in one of the following types of shock:
    - a. Hypovolemic.
    - b. Respiratory.
    - c. Cardiogenic.
    - d. Psychogenic.
    - e. Neurogenic.
    - f. Metabolic.
    - g. Septic.
  - 8. Interact with patient and relatives and friends of the patient brought into the Emergency Room. Observe their behavior in the situation.
  - 9. Observe the history taking techniques of an Emergency Room patient by a Registered Nurse twice and follow through by initiating the history taking the third time, under supervision.
  - 10. Observe and participate in the proper tehcnique of physical assessment.
- B. Operating Room.
  - 1. Observe at the surgeon's discretion, in at least one surgical.
  - 2. Observe the implementation of the sterile technique.
- C. Maternity Unit.
  - 1. Labor Room—Time the duration of a contraction.
  - 2. Labor Room—Listen to the fetal heart tones before, during and after a contraction.

3. Observe one complete delivery, including post-partum care of the mother.
4. Observe the procedures of suctioning of the newborn.
5. Observe the care of the umbilical cord.
6. Observe and participate in the proper technique of a physical assessment of the newborn.

D. Intensive Care

1. Observe and participate in maintenance of the airway.
2. Observe and participate in assessing patients for:
   a. Heart sounds.
   b. Breath sounds.
   c. Shock.
   d. Signs of heart failure.
   e. Abdominal problems.
   f. Full bladder.
3. Observe and participate in the admission of a patient.
4. Observe and ask questions as to the interpretation of the heart monitor.
5. Interact with the patient and the relatives and friends of the patient.

***NOTE:** In situations where these activities are not achievable in a reasonable period of time; programmed patient simulations or other activities may be used to ensure student competency.

☆U.S. GOVERNMENT PRINTING OFFICE: 1984-421-016/16578

DOT HS 900 073
March 1984